

# The Iron Age

A CHILTON

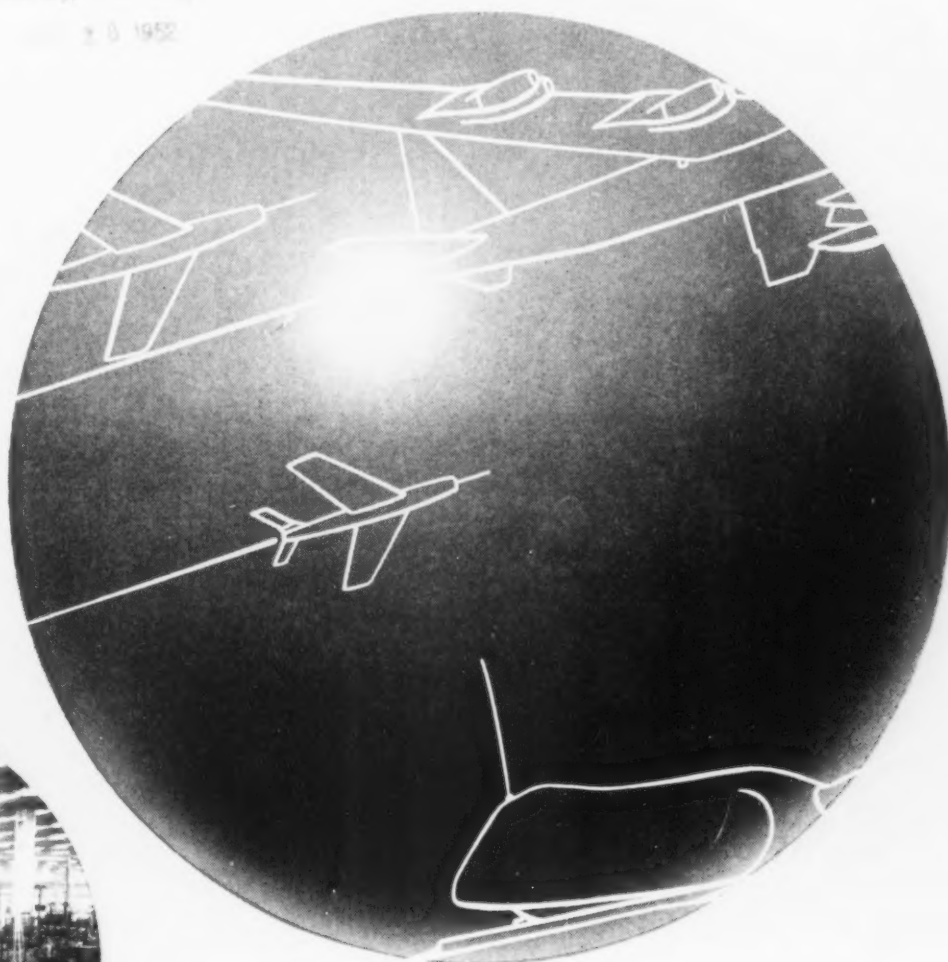
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THE NATIONAL METALWORKING WEEKLY


October 16, 1952

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## SILENT SOLDIER FOR DEFENSE

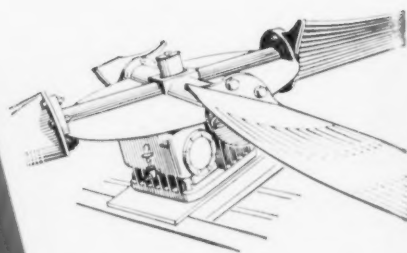


On the Korean front . . . on American farms . . . in factories geared for defense needs . . . New Departure Ball Bearings are worthy warriors. In an almost endless variety of applications, New Departures increase accuracy, permit higher speeds and resist all loads. They also reduce maintenance and aid in simplifying design problems. New Departure application engineers will be glad to apply their skill and experience to your particular problem. They are available for everything from new design jobs to improvement of existing installations. The Great Ball of New Departure is the symbol of engineering

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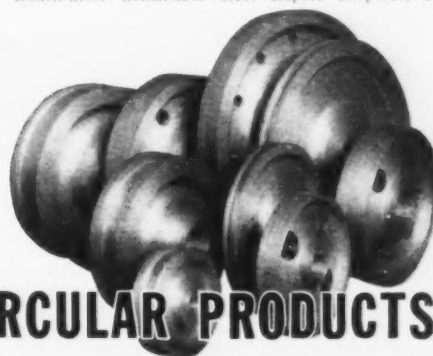
You might ask, "How can we be sure? How are these blanks different from any others?"

First of all, they're made from steel selected with extra care. Second, they're made by a special, exclusive process that forges the steel and rolls it too — thereby insuring compactness of metal, uniform density, and just the right grain structure.

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## BETHLEHEM ROLLED-AND-FORGED CIRCULAR PRODUCTS

# The Iron Age—DIGEST

Vol. 170, No. 15  
October 16, 1952

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## NEWS AND MARKETS

### TV OUTPUT PICTURE HAS NO INTERFERENCE — P. 37

There's not a smudge of pessimism on the television industry's production picture. Inventories have been shed as sales improved. Manufacturers are rising to expectations of many new markets and greater buying interest. Many expect that next year will see 6 million video sets made—a fat gain over '52.

### WILL BARS BOOST USE OF PRESTRESSING? — P. 40

Labor costs here have made it difficult to use prestressed concrete in America. Structural steel shortages aroused new interest in technique but it still took many manhours and much quality wire to tension cables. Now a new method known as the Lee-McCall system uses special bars and shows great promise.

### WHAT MATERIALS HANDLING TRUCKS TO USE—P. 41

To successfully adapt materials handling equipment a plant must know its facilities. This equipment falls roughly into three categories: the lift truck, the tow truck or tractor, and the light crane. Fork trucks are versatile and speedy and come in many models for varying industrial jobs and needs.

### BIG LOAD OF BARGES HAS GOTTEN BIGGER—P. 43

Barge traffic on the Mississippi climbed 8 pct in 1951 over the figure for the previous year. The Tennessee River moved into a pace-setting position with a claim of a 50 pct hike in water shipments over 1950. Barge owners were calling the drop in petroleum shipments a trend bound to continue.

### DID WORLD WAR II BOMBING K.O. INDUSTRY?—P. 44

Survey of German industrial centers shows mass bombings only 2.5 pct effective. But safety of industry in the last war has no bearing on atom bomb era. Only 20 A-bombs needed to match the explosive power of all bombs dropped on Germany by Allies during World War II.

### NAVY SEES NEED FOR NEW CARRIER PROGRAM—P. 89

The Navy Dept. may ask Congress early in '53 for the right to launch a huge new carrier building project. The Navy will argue larger and heavier carriers are needed for modern plans and new war needs. Much more steel will go into these ships which are larger than those constructed for World War II.

# of the WEEK in metalworking

## ENGINEERING & PRODUCTION

### FORM-QUENCH PLATES IN HYDRAULIC PRESS—P. 97

Armor plates from 1/4 to 3 in. thick are formed and rapidly and uniformly quenched in the dies of a 2500-ton Fastraverse hydraulic press. Plates to 70 x 200 in. can be handled. Unit is located between hardening and draw furnaces with handling done on roller conveyers. Pressure can be varied as needed.

### FASTER SCREW SLOTTER CUTS SEVERAL HEADS—P. 100

A high speed screw slotter—20 times faster than conventional machine—can slot all standard sizes and head shapes. Round head screws require no deburring. Saws have longer life per grind than those on conventional equipment. Reduction of slotting costs have been estimated at 50 pct.

### AISE SEEKS KEY TO MORE AND BETTER STEELS—P. 102

Steelmaking engineers and executives attending their annual Iron and Steel Exposition at Cleveland had one thought in mind—how to get more and better steels from the country's steelmaking machinery. Highlight of the reports on technical progress was Jacques Sejournet's paper on steel extrusion.

### PART II—TITANIUM OUR NO. 1 PROBLEM METAL—P. 105

Titanium castings containing from zero to 0.015 C have been made by skull melting methods. New alloy powders soon to be available promise to help solve some of the difficulties in melting homogenous alloy ingots. Price of sponge made by magnesium reduction may fall.

### MOLY BASED CERAMIC OPERATES AT 2700° F.—P. 114

A hybrid molybdenum based metal ceramic recently developed withstands thermal shock, resists oxidation, operates at temperatures about 2700° F. The material, known as D-1922, is made using powder metallurgy techniques. It can be turned, drilled, filed, cut in the pre-fired or "green" condition.

### NEXT WEEK—MADEOVER MACHINES FOR FAST START

Pressed for delivery of new Army CD-80 tank transmissions Buick engineers scrounged up idle machinery from Army reserves, sorted over old fixtures. Inventive engineers came up with machines that got shipments moving. Setups weren't always ideal but many production bugs are being ironed out early.

## MARKETS & PRICES

### DETROIT ASSEMBLY LINES RUN AT FULL SPEED—P. 54

New passenger car and truck output is reminiscent of free market boom days. Industry sources are confident production will hit the half million mark this month. This would make October the best month since May, 1951. Paradoxically enough, these records are being set in spite of changeovers to new models.

### NICARO NICKEL PLANT IS PAYING DIVIDENDS—P. 61

Iron Age was told by GSA that a soon-to-be-issued report will show the millions spent in reactivating the Nicaro nickel plant are yielding good results. Preliminary figures indicate the plant is nearing an output rate of 15,000 tons and 12 furnaces are operating. The plant is now 8 pct more efficient.

### STEEL FOR WESTERN DEFENSE EXPANSION EASES—P. 63

Steel supplies for defense-connected expansion in the West Coast area should catch up with demand during the first quarter of '53. Issuance of NPA certificates in the area hit a new low last week, coming to only 2 pct of the national average. Mills see peak demand in the first quarter, then easing.

### HOW GOOD IS THE NPA TOOL INVENTORY?—P. 64

NPA's inventory of 30,000 machine tools left over from World War II is helping to break some of the tool shortage bottlenecks. But most critical needs must be met by new production. Evaluation of the inventory varies. Bright future seen for tool replacement business.

### EXPECT EASING BUT STEEL MARKET'S TIGHT—P. 121

Although steelmakers and users expect easier steel supply in first part of 1953, there is strong demand for record production. A freight car shortage is stalling some urgent deliveries. District sales offices report new tightening. Some mills are shortening their long-range scrap commitments.

### U. S. LEAD PRICES FOLLOW BRITISH DECLINE—P. 124

Decline of lead prices on the London Metal Exchange last week pressured American producers into slashing prices 1¢ to 14.80¢, St. Louis. Demand remained low in spite of the dip. A further drop may be in order, particularly if British prices remain at current levels of about 13 5/8¢, New York delivery.



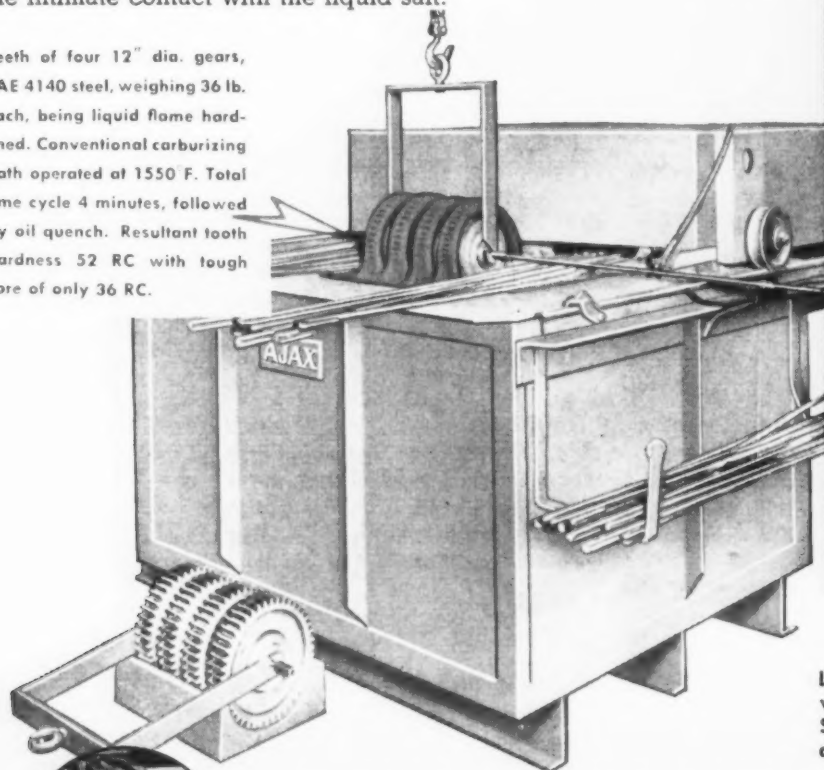
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THE IRON AGE



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## Editorial

*The* **Iron Age**

FOUNDED 1853

## Out With Controls

**W**E have had price controls but no wage controls during the defense buildup. Labor seems to have gotten more under so-called wage stabilization than it would have obtained without controls. That is understandable when the one-sided stand of the Administration is considered.

While industry has been "allowed" to have a small price adjustment, it has been castigated, insulted and maligned for insisting that much of the higher wage costs must come from higher prices. These price adjustments have been given reluctantly. They have been accompanied usually by a smear campaign on profits.

This week hundreds of small companies are being squeezed between ceiling prices and higher wage and material costs. A delayed and half-baked method of allowing an increase to take care of higher material costs is being ballyhooed as "fair treatment."

What is really happening is that these smaller companies—and many big ones as well—are being forced to grant the same wage pattern as did the basic industries but are not allowed higher prices to take care of this increase.

The whole wage-price control setup has been a sham. Some Administration people are trying to prove that controls have stopped inflation. That's a laugh. It has been increased production which has stopped or temporarily halted inflation.

But increased production has not given companies a fair profit after taxes. Only from profits can a company put aside money with which to buy new equipment necessary to meet higher wage costs and to boost output. Thus price controls can make it impossible for firms to have the means of successfully combating inflation while at the same time granting unusual wage hikes.

All controls should be thrown out now. There was no need for them in the beginning. They have no place in a democracy which prides and proves itself on low unit cost, high production, defense accomplishments and customer satisfaction.

*Tom Campbell*

Editor





# Lower Costs

## of MATERIAL HANDLING

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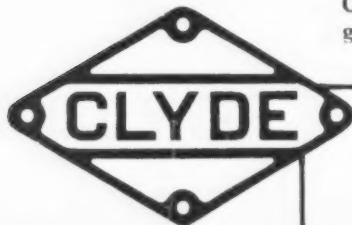
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SUBSIDIARY OF BARIUM STEEL CORPORATION



# Dear Editor:

Letters from readers

## A Privilege?

Sir:

We have been taking THE IRON AGE since it was founded. Every issue crosses my desk and I always turn first to your editorial for I enjoy every one of them and want to compliment you on the fine way you have of expressing your thoughts and the topics selected.

Referring to your editorial "A Privilege," have you ever thought of the thousands of Americans to whom the wonderful privilege of voting is denied year after year by our archaic voting laws? They were inaugurated in our horse and buggy days.

I am well aware that many restrictions should be placed on our voters, but I cannot reconcile the denial of the ballot to the thousands who have to move from state to state around election time. It is just very unfair. And the boy scouts are calling at our doors and the radio blares forth and television daily calls us citizens to be sure to vote to preserve our liberties.

We Americans surely are funny people. We turn everything upside down to get out the vote and at the same time permit legislation denying the vote to thousands of fine citizens who are exactly entitled to it as much as you or I.

J. P. CHENEY  
Director

S. Cheney & Son  
Maulins, N. Y.

## Older Worker

Sir:

Your editorial of Sept. 11 relative to "The Older Worker" is to be commended for the thoroughness in which you handled it.

But where is it going to get us? Many symposiums have been held on employing the older worker, some government sponsored, but at long as top management keeps on advertising for engineers, factory managers, superintendents under 45 years, the best use of our manpower to maintain our way of life will never be realized.

It is time that top management caught up with the times and realized that the best brains of the country are in the age of over 45.

Take my own experience, a registered professional and industrial engineer, with an outstanding record in metal manufacturing. After 6 years of industrial consulting, on trying to re-enter the metal manufacturing business as a works manager

or factory superintendent, I have been informed that at the age of 54, when I am actually at the height of my knowledge and experience—too old. And why? Retirement at the age of 65. I have been told by management consultants, having the responsibility of screening employees for executive positions, that top management expects 20 years service before they consider an executive employee profitable.

How ridiculous! Your last paragraph certainly hits the nail on the head.

Norwalk, Conn.

J. HAAS

## Plastic Dies

I enjoyed your very enlightening article in the Sept. 18 issue on plastic prototypes. In the same issue, under Automotive News, I noticed an article on the use of phenolic plastic in the manufacture of metalworking dies.

While our operation and our production is probably too small to utilize plastic prototypes, it might be that plastic dies may hold an important answer in our stamping picture since our runs are, of necessity, short and production comparatively low.

I would certainly appreciate any technical information you can give me on the use of phenolic plastics in the manufacture of dies, whether such dies can be used for forming only or may be used for piercing, notching, etc.

A. R. LEO  
Purchasing Agent  
Money-Meters, Inc.  
Providence

Write to Mr. Lee Miller, Resolin, Inc., 5736 W. 96th St., Los Angeles, Calif., for more details on plastic dies.—Ed.

## Tool Life Studies

Sir:

The Newsfront page of your Oct. 2 issue contained an item referring to tool life studies made by a researcher on the effect of the type of coolant used and manner in which it is applied to carbide milling.

Will you please inform me if the results of these studies are available to industry and if so, where they can be obtained.

H. A. SMITH  
Head, Process Development  
Arms Research and Development  
Olin Industries, Inc.  
New Haven, Conn.

A full technical article on the results of these studies will appear in our Oct. 23 issue.—Ed.

# di-acro

## PRECISION MACHINES

for Die-less Duplicating

<b>BENDERS</b> 5 hand models 2 power models	
<b>SHEARS</b> 4 hand models 4 power models	
<b>ROD PARTERS</b> 2 hand models 1 power model	
<b>NOTCHERS</b> 1 hand model 1 power model	
<b>PUNCH PRESSES</b> 2 hand models 2 power models	
<b>BRAKES</b> 10 hand models	<b>ROLLERS</b> 2 hand models

See the complete line at



# BOOTH 630

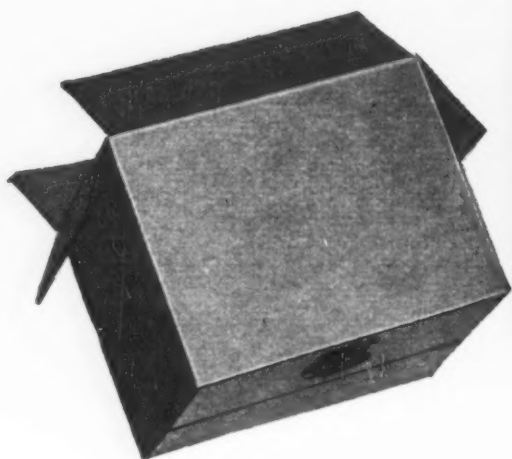
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FOR ASSURANCE OF *Service*  
FOR ASSURANCE OF *Fair Price*

**M**OST corrugated containers *look* alike. But the difference shows up in performance.

The famous Union shield trade-mark is your assurance that every step in making the box, from

the forest to the finishing room, is handled by trained personnel in the largest Kraft pulp-to-container plant in the world.

It symbolizes seventy-five years of leadership in designing, engineering and producing paper packages . . . plus long experience as one of the nation's larger producers of Kraft container board.

You can rely on Union shield-marked boxes to give you quality and service at a fair price—not only this year but for years to come!

**UNION** *Corrugated Containers*  
**UNION BAG & Paper Corporation**

Principal Offices: WOOLWORTH BLDG., NEW YORK 7, N. Y.

Corrugated Container Plants: SAVANNAH, GA. • CHICAGO, ILL. • TRENTON, N. J. • JAMESTOWN, N. C. (Highland Container Co., Inc.)



# Fatigue Cracks

by Charles T. Post

## Cradle to Grave

What with all the noise incident to the national election campaigns, very few people noticed last week that union labor had reached its goal of buttoning up the last of the seven ages of man. For some 50 years, New York's millinery workers have been organized—that is, all except one key group. The baby bonnet workers retained their individuality.

That's all over now. You can think of them henceforth as Local No. 110 of the A.F.L. United Hatters, Cap and Millinery Workers, who have a contract with ten employers. The employers, bowled over separately, are about to form their own association, it is indicated.

If you thought the steel strike was bad, just imagine what the effect on the nation's morale would be if the baby bonnet industry were shut down for a few months, what with all those bald, pink little heads exposed to the elements. We know what's going to happen next: The employers and the union will get together to stimulate style changes. Little Patty Ann, née 1952, will be in high style with a mauve Princess Eugenie model perched on top of her head. Baby brother Ned, a 1953 arrival, will be ostracized without a cerise cloche pulled down over his ears. No more hand-me-downs.

The babies are pretty well tied down as far as their bonnets are concerned, but just let the Boot and Shoe Workers try and move in on the bootie factories. They'll have a few kicks coming there, we'll wager.

## Tippecanoe

Our friends have had to pick up the tab for most of our lunches lately, merely because we bet them that they can't remember the name of the Republican vice-presidential candidate who ran with Wendell Willkie. (Ans.: The late Sen. McNary of Oregon.)

We finally got our come-uppance when we tossed the challenge to a couple of young secretaries here in the office.

"Why, Mr. Post," they admonished, "we were only ten years old during that campaign."

With that, we quietly brushed back our white mane, picked up our cane, and hobbled silently away.

## Ceiling Price

Sometimes we don't know how seriously to take the Office of Price Stabilization.

Ceiling Price Regulation 34, Territorial Supplementary Regulation 2, October 1, 1952, is headed "Recapping and Retreading Services in the Virgin Islands."

## Why Walk?

Bob Hammerstein, Bushwick Iron & Steel Co., Inc., calls our attention to the appointment of Walker Way as advertising and merchandising director for Chrysler automobiles.

More appropriate is the news item from Albany, N. Y., that Robert G. Bacon has sold his home to Howard Hamm. The broker: Richard I. Bone.

## Puzzlers

By this time, we've had a chance to check the answers on some of the earlier problems, and the honor roll reads like the roster of an engineering society.

Solving the problem of picking the counterfeit from 12 silver dollars in three weighings are Owen T. Barker, Post Cereals Div., General Foods; E. A. Schwab, Emerson Radio & Phonograph Corp.; R. H. Schaller, Jones & Laughlin; Lewis D. Rice, Timken Roller Bearing Co.; R. L. Sites, New York City; Edward C. Varnum, Barber-Colman Co.; and M. P. Higgins, Sam C. Earley Corp.

Mr. Heilman's chickens were correctly counted by Clarke Redfield, Eclipse-Pioneer Div.; J. W. McMurray, South Wind Div., Stewart-Warner; David A. Climan, Allied Chemical & Dye Corp.; P. Pozzi, American Flange & Mfg. Co.; Joseph Mancini, Portland Copper & Tank Works; Thomas B. Hudson, Jr., Albert Curry & Co.; Mr. Rice, Mr. Schwab; and Carl Schendel, Clark Controller Co.

The inverted cone problem was mastered by Mr. Varnum; A. E. Canfield, The Strong-Scott Mfg. Co.; T. V. Sikorski, Reliable Electric Co.; and Charles Pipenhagen, Jr., Capson Mfg. Co.

Because Charles G. Heilman's chicken problem was so successful, you may want to try another of his with a little different twist: What number of four digits, when multiplied by 9, gives a product the reverse of itself? Of 5 digits? Of 6 digits?

# metalwash

WASHING MACHINES  
PICKLING MACHINES  
QUENCH TANKS

# metalwash

We are proud  
to announce publication of  
**METALWASH**  
FINISHING ENGINEER,  
a quarterly magazine  
addressed to executives  
and engineers  
to whom new methods  
and new materials  
for finishing are  
subjects of daily concern.



Please write us  
if you would like to receive  
FINISHING ENGINEER regularly,  
starting with the first issue,  
October, 1952

# metalwash

**MACHINERY CORPORATION**  
920 North Avenue  
Elizabeth 4, New Jersey

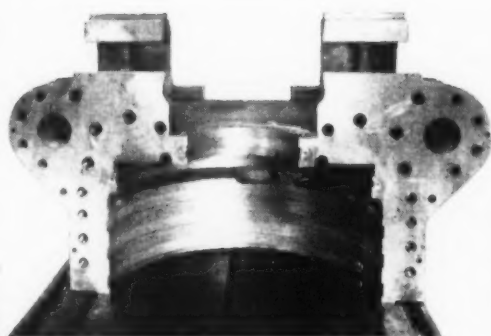
REPRESENTATIVES  
IN PRINCIPAL CITIES



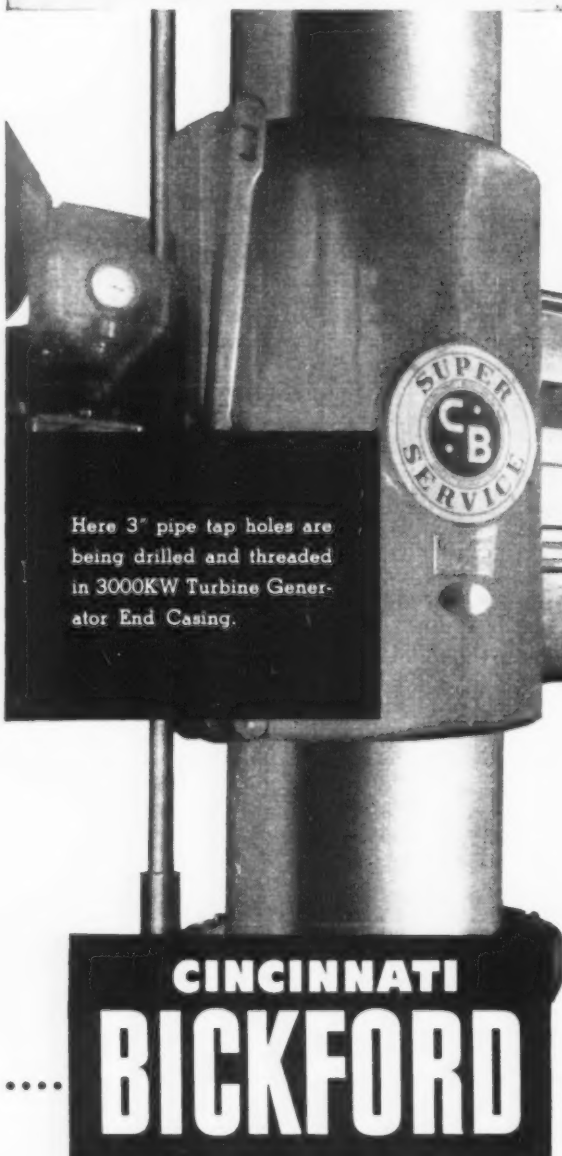
# BICKFORD *for big work...*

This powerful Cincinnati Bickford Super Service Radial Drill was purchased to facilitate handling of "big work." It was the right machine for the job. In the complete line of Cincinnati Bickford Radial Drills, with their many outstanding features, is the right machine for you.

Write us for descriptive literature, or consult our Engineering Department on drilling needs.

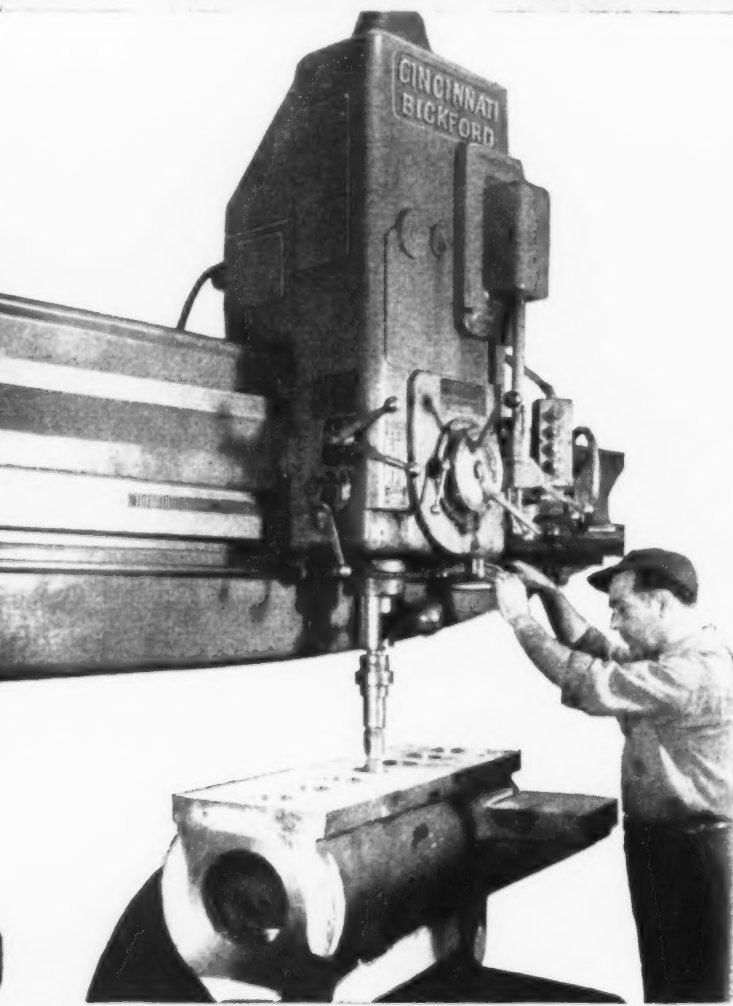


Photos—Courtesy Worthington Corporation, Steam Turbine Division, Wellsville, N. Y.




Here 3" pipe tap holes are being drilled and threaded in 3000KW Turbine Generator End Casing.

**CINCINNATI BICKFORD**



**CINCINNATI BICKFORD**



**RADIAL AND UPRIGHT DRILLING MACHINES**

.....

**THE CINCINNATI BICKFORD TOOL CO.**

Cincinnati 9, Ohio, U.S.A.



## Conventions & Meetings

Oct. 13-17—American Institute of Electrical Engineers, Fall General Meeting, Jung Hotel, New Orleans. Institute headquarters are at 33 W. 39th St., New York.

Oct. 14-16—Seventh Annual Industrial Packaging & Materials Handling Exposition, Chicago Coliseum, headquarters are at 20 W. Jackson Blvd., Chicago.

Oct. 16-17—Gray Iron Founders' Society, Inc., 24th annual meeting and convention, Hotel Cleveland, Cleveland.

Oct. 17-19—Metal Treating Institute, annual meeting, Hotel Warwick, Philadelphia. Institute headquarters are at 271 North Ave., New Rochelle, New York.

Oct. 19-21—Conveyor Equipment Manufacturers Assn., Annual Meeting, The Greenbrier, White Sulphur Springs, West Virginia. Association headquarters, 1129 Vermont Ave., N. W., Wash., D. C.

Oct. 19-24—American Welding Society, 33rd National Fall Meeting, The Bellevue-Stratford Hotel, Philadelphia, Pa.

Oct. 20-22—American Institute of Mining and Metallurgical Engineers, Institute of Metals Div., fall meeting, Hotel Adelphi, Philadelphia. Institute headquarters are at 29 W. 39th St., New York.

Oct. 20-24—National Metal Congress & Exposition, Convention Hall, Philadelphia.

Oct. 20-24—National Safety Council, national safety congress and exposition, Chicago. Council headquarters are at 20 N. Wacker Dr., Chicago.

Oct. 21—Gas Appliance Manufacturers Assn., Industrial Gas Equip. Div., Hotel Warwick, Philadelphia.

Oct. 22-24—Society of Automotive Engineers, Inc., National Transportation Meeting, Hotel William Penn, Pittsburgh. Society headquarters are at 29 W. 39th St., New York.

Oct. 23-24—Steel Products Warehouse Assn., annual meeting, Waldorf-Astoria Hotel, New York.

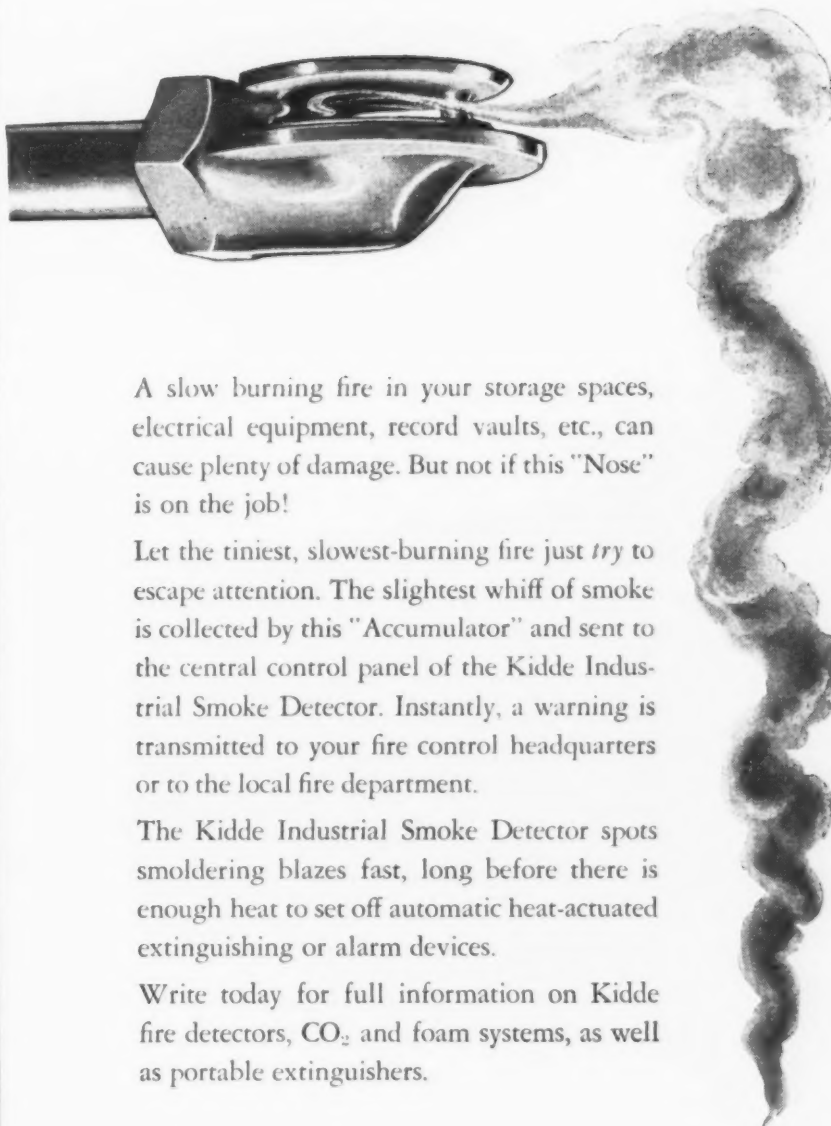
Oct. 24—Malleable Founders' Society, Western Section Meeting, The Drake, Chicago. Society headquarters are at Union Commerce Bldg., Cleveland.

Oct. 24—Illinois Mining Institute, 60th Annual Meeting, Hotel Abraham Lincoln, Springfield, Ill.

Oct. 26-29—American Gear Manufacturers Assn., semi-annual meeting, Edgewater Beach Hotel, Chicago. Assn. headquarters are at Empire Bldg., Pittsburgh.

Oct. 27-30—American Gas Assn., annual convention, Atlantic City, Hotel Traymore, N. J. Assn. headquarters are at 420 Lexington Ave., New York.

## fire can't hide from this "Nose"



A slow burning fire in your storage spaces, electrical equipment, record vaults, etc., can cause plenty of damage. But not if this "Nose" is on the job!

Let the tiniest, slowest-burning fire just *try* to escape attention. The slightest whiff of smoke is collected by this "Accumulator" and sent to the central control panel of the Kidde Industrial Smoke Detector. Instantly, a warning is transmitted to your fire control headquarters or to the local fire department.

The Kidde Industrial Smoke Detector spots smoldering blazes fast, long before there is enough heat to set off automatic heat-actuated extinguishing or alarm devices.

Write today for full information on Kidde fire detectors, CO<sub>2</sub> and foam systems, as well as portable extinguishers.

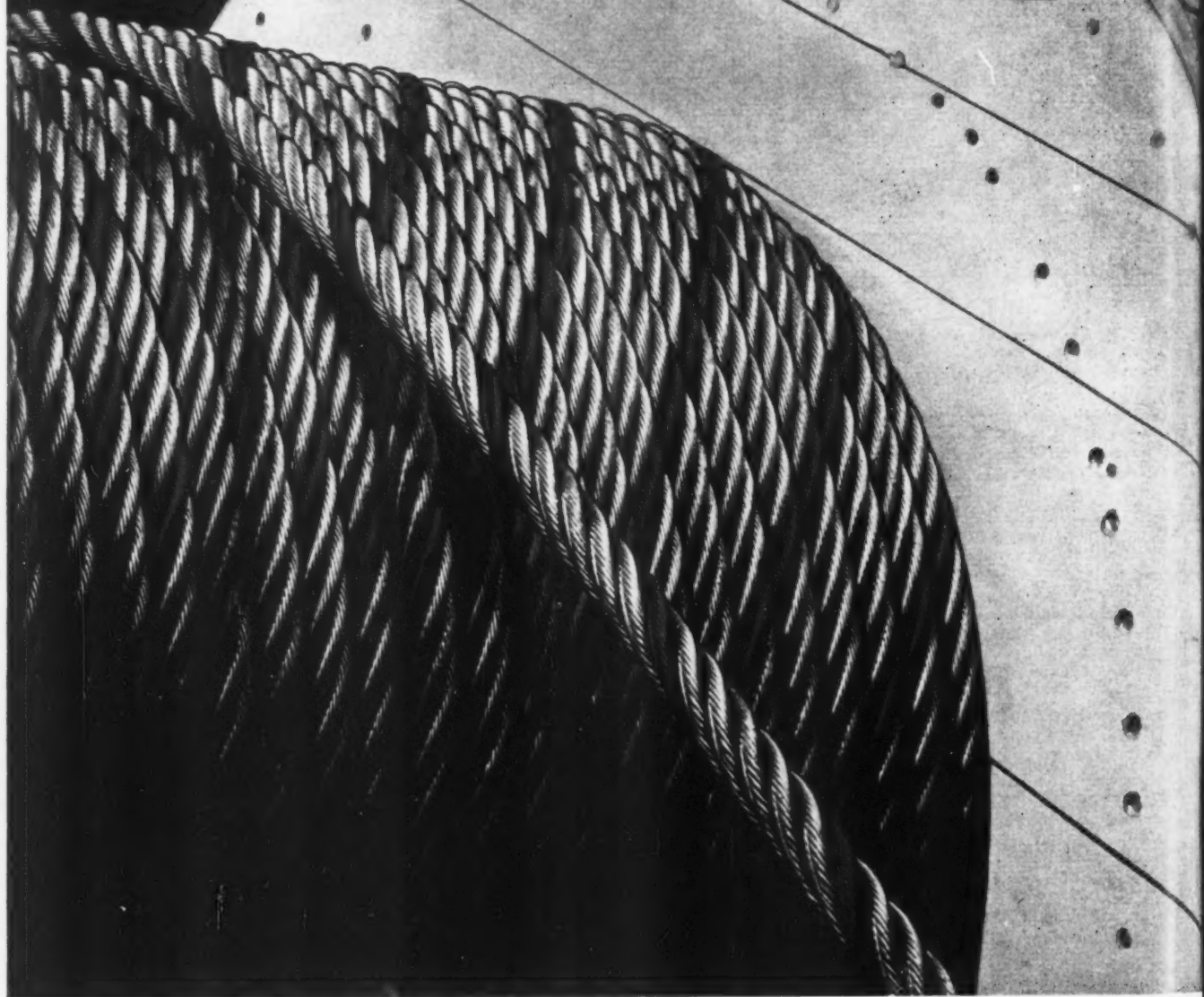
# Kidde

**Walter Kidde & Company, Inc.**

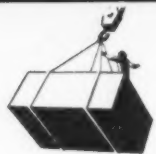
1049 Main Street, Belleville 9, N. J.

**Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.**

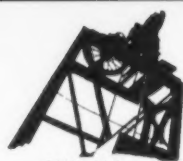
# *This wire rope*



CONSTRUCTION



LIFTING



MINING



MANUFACTURING



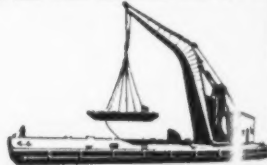
LOGGING



QUARRYING



OIL & GAS



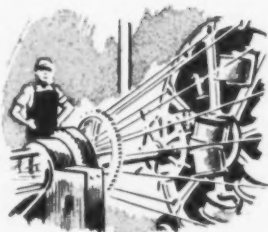
TRANSPORTATION

THE IRON AGE

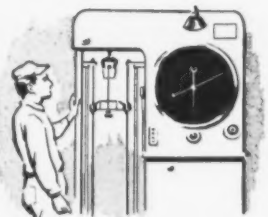
# *we must deliver...*

**because "We always strive to make  
HERCULES Red-Strand Wire Rope  
better than we claim it to be..."**

**This is a primary principle of Leschen manufacture. It must give you Red-Strand wire rope that wears exceptionally long . . . delivers top tonnage. It must give you Red-Strand wire rope that saves workers' time . . . earns their complete trust.**



**You get manufacturing craftsmanship** when you use Hercules\* Red-Strand wire rope. Leschen management and workmen know wire rope inside and out—it's *their only business*. They know how to make it better. Generations of the Leschen family—and workmen's families—take pride in producing a product that will serve you better.



**You get exactly tested wire rope** when you use Hercules Red-Strand. Every coil of wire that goes into Leschen rope is rigidly torsion- and tension-tested. Every rope is double-checked for accurate fabrication—diameter, length of lay, strand clearance, lubrication. During World War II, millions of feet of Leschen wire rope passed every test by the Armed Forces *without a single reject*.



**You get individual attention** to satisfy your exact needs. Every executive, representative and workman in the Leschen organization follows this 95-year-old policy. Records are kept on every length of wire rope made in the Leschen mill—to provide rechecks on every installation—and to help you get the best type and grade of wire rope for your specific application.

**Try Hercules Red-Strand wire rope. Keep comparative records.  
You'll experience the difference. Next time, specify . . .**

PREFORMED • ROUND STRAND • FLATTENED STRAND • NON-ROTATING • LOCKED COIL • SLINGS



# LESCHEN WIRE ROPE

Reg. U.S. Pat. Off.

A. Leschen & Sons Rope Co., St. Louis 12, Missouri

*in business only to make wire rope—better wire rope—since 1857.*

DISTRIBUTORS IN ALL PRINCIPAL CITIES

October 16, 1952



**"Tycol Acylkup  
keeps bearings running cool...  
does not emulsify with water"**



That's right! Tycol Acylkup Grease withstands heavy unit pressures . . . resists emulsification with water. It is easily applied by grease gun or central system.

Further, Tycol Acylkup Grease contains a high grade paraffin base cylinder oil that steps up bearing efficiency and assures increased bearing life. Protection against wear is long-lasting.

Your nearest Tide Water Associated Office will be glad to give you complete information. Call or wire today.



Boston • Charlotte, N. C. • Pittsburgh  
Philadelphia • Chicago • Detroit  
Tulsa • Cleveland • San Francisco



SEND FOR A FREE COPY OF "TIDE WATER ASSOCIATED LUBRICANIA"





## HOW TO MAKE A SOCKET-WRENCH

# Wrench better

The steel shell of a mechanic's socket wrench has a tough job. The wall must be thin to slip over nuts in tight spots, the wrench must be strong and tough to keep its grip on the nut once the wrenching starts. The wrenches made by Herbrand have a reputation among mechanics for getting into close quarters and doing the job without slipping or giving.

Here's how Herbrand metallurgists and designers used Republic Steel 3-Dimension Metallurgical Service to pick the best Republic Alloy Steel to do the job . . .

Improvements in machinability on high-speed automatic machines were important . . . better hardenability of the finished wrench sockets was required . . . and production costs had to be kept down.

Herbrand metallurgists called in the Republic Field Metallurgist. Told him their problem. He went into a huddle with the other two members of the Republic 3-Dimension Metallurgical team . . . the Mill Metallurgist and the Laboratory Metallurgist.

The answer was soon ready . . . the recommendation of a certain one of the many grades of Republic Alloy Steels that would give Herbrand the desired machining and heat-treating characteristics, every time, lot-after-lot, at the necessary low cost.

You, too, can achieve quality improvements like this in your products . . . a call will bring the Republic Field Metallurgist into your picture.

### REPUBLIC STEEL CORPORATION

*Alloy Steel Division • Massillon, Ohio*

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N.Y.



**3-DIMENSION**  
Metallurgical Service

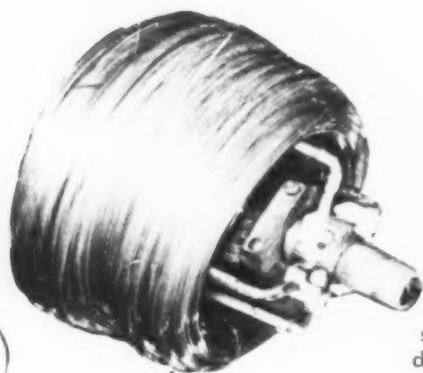
...combines the extensive experience and co-ordinated abilities of Republic's *Field, Mill* and *Laboratory* Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage. IT CAN DO THE SAME FOR YOU.

*Republic* COLD DRAWN  
**ALLOY STEEL BARS**



# Problem...

## DESIGNING AND BUILDING A COMPLETE WIRE GALVANIZING SYSTEM . . .



For galvanizing wire, Wean Equipment designed and built the first packaged line ever installed at one time.

Wire machinery in the past always just seemed to accumulate, and be merged into a line that would produce the type and kind of wire desired. Many wire concerns pieced together complete lines, oftentimes fabricating the machinery in their own shops. This is because there was very little coordinated engineering in the field. There was actually no place to go to purchase an entire line from a single source.

Wean Equipment Corporation had established a high reputation for designing and building special machinery for the metals working industries. Complete lines that would automatically perform difficult operations were Wean's strong suit. With this in mind the Colorado Fuel and Iron Corporation asked Wean to design and develop a complete wire galvanizing line to be installed in their Minnequa works.

# Solution...

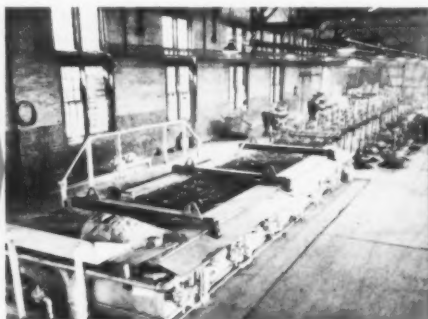
## PACKAGED LINE THAT PRODUCED BETTER WIRE AT RECORD SPEEDS . . .

Wean had been experimenting with automatic wire machinery and had assembled perhaps the largest library of wire machinery information held by one company. By drawing on this knowledge it was only a matter of months until the first completely packaged wire galvanizing line was being installed. Today the line is capable of applying a quality coating at a speed of three miles per minute. For all practical purposes there has been no maintenance.

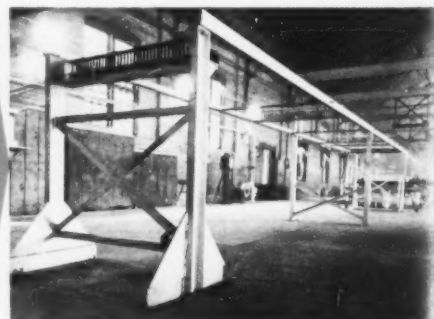
The line is something of a composite of the best features found in studying lines assembled by several leading wire producers. Thirty-six strands of wire are galvanized simultaneously. Each strand has a tandem payoff reel. When one reel has reached the payoff point an operator merely twists the lead of the coil on the second reel to the end of the coil on the first reel and continuous operation is maintained. The wire is acid pickled. It is then water rinsed



1. Plain wire leaves payoff reels. Note the two reels for each strand of wire. It immediately enters the . . .

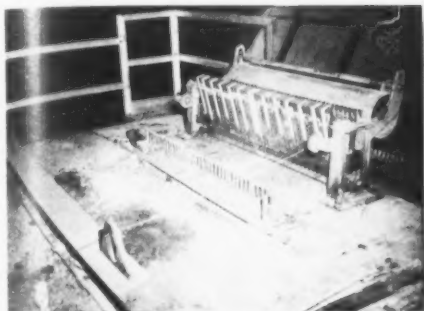


2. Lead annealing box where drawing compounds are burned off. It then goes onto a . . .

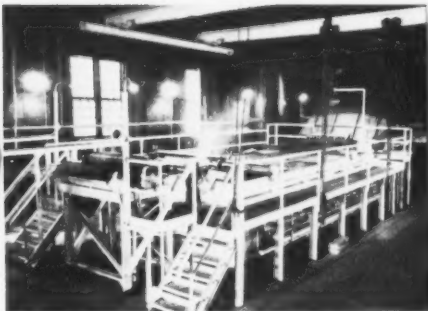


3. Cooling rack where wire is air cooled, and into a . . .

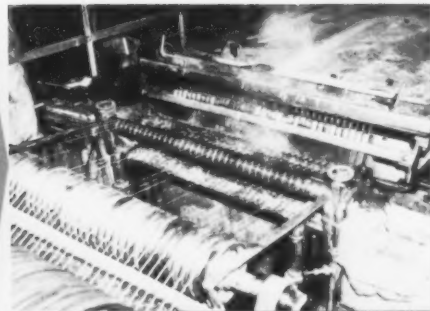
DESIGNING AND BUILDING TOMORROW'S METAL WORKING



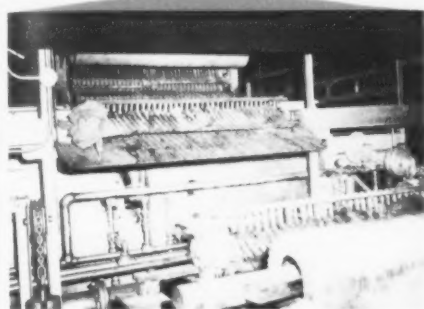
7. Splice caller, a unique device that detects the temporary splice, warning operator, then into the . . .



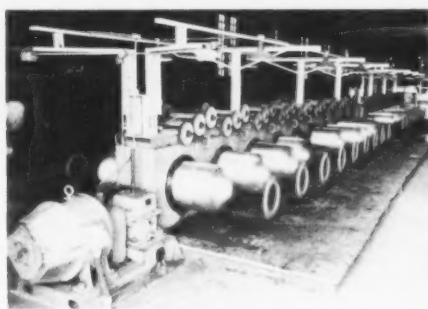
8. Galvanizing furnace where zinc coating is applied. The wire then goes through an . . .



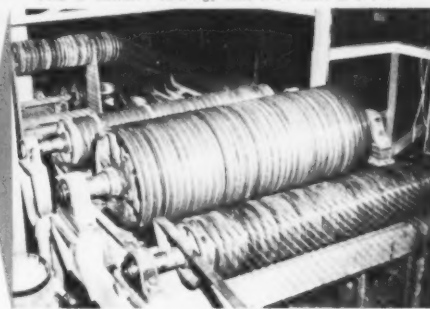
9. Asbestos wipe where excess zinc is removed, giving wire a uniform coating, and then into a . . .



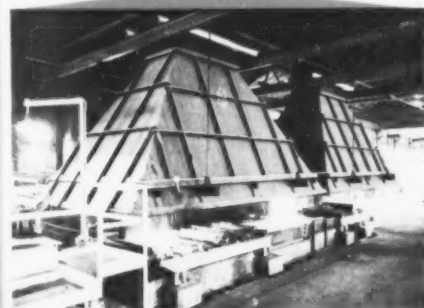
6. Flux tank where flux is applied preventing oxidation prior to galvanizing, then through the . . .



11. Take-up blocks where it is coiled and periodically removed.



10. Cold water quench for cooling prior to handling, and finally onto . . .



5. Acid pickle to clean off remaining scale. It then goes through a second water rinse before entering . . .



4. Water rinse for complete cooling. Wire then enters . . .

★ and sent through a zinc bath where it becomes coated. It then runs through an asbestos wipe where excess zinc is removed. At this point a warning system lets the operator know when the rough union (where the coils were attached) is about to come through the wipe. The operator merely lifts the wipe allowing the joint to pass, drops the wipe and the wire continues over a drying rack, and finally onto the take-up spindles.

The take-up spindles are constructed in a manner that perfectly recoils the wire at high speeds, but still allows a collector to unfasten the rough joint and take each original coil off separately.

***It's this kind of problem-solving work that has given Wean Equipment Corporation a reputation as the nation's foremost designers and builders of special machinery. Next time you find yourself in need of answers—call in a Wean engineer. There's absolutely no obligation.***



EQUIPMENT CORPORATION  
**Wean**  
Cleveland, Ohio

**MACHINERY TODAY IS THE BUSINESS OF THE**



Now . . . 2 New  
**AO COVERGLAS GOGGLES**  
 Fit Over Safety  
 And Personal Glasses



#326

**NEW - 4 WAYS!**

1. New Cup Size and Shape
2. New Lens Size and Shape
3. New Side Shields
4. New Easy Lens Replacement



#327

AO's newest development in eye protection—Chippers' and Welders' Coverglas Goggles—can be worn over practically every pair of personal glasses (even the biggest frames) and most types of safety prescription goggles *with and without side shield*.

Wider vision, too, because the lenses are larger and scientifically designed to give up to 20% more vision. Yet, with all these features the goggles weigh but a fraction of an ounce more than ordinary Coverglas goggles . . . cost only slightly more.

These goggles are the newest . . . and two of the greatest . . . developments since the advent of safety goggles. Get all the facts about these two outstanding Coverglas goggles from your AO Safety Products Representative. He can supply you.

**QUICK FACTS**

- Lens easily replaceable from rear (not front) by means of a spring clamp—no tools needed
  - Lightweight, brown plastic cups fit face snugly, won't conduct heat or electricity
  - Light-tight side shields for welders (on No. 327 goggle) provide indirect ventilation
  - Bridge—High-grade leather. Instant adjustment
  - AO worker-lab tests show much greater field of vision and increased comfort
  - All-rubber headband, easily adjustable
- "326" Chippers' Coverglas goggle supplied with regular Super Armorplate lenses. "327" Welders' Coverglas goggle supplied with regular Noviweld lenses and cover lenses.

AO's Industrial Vision Program Increases Production, Decreases Accidents. Write today for booklet "Improved Industrial Vision" to 1011 Vision Park, Southbridge, Mass.



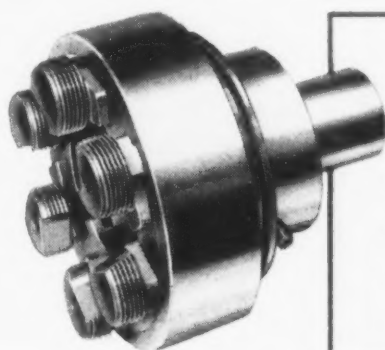
SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

# NAMCO VERS-O-TOOLS and COLLAPSIBLE TAPS SET THE STANDARD

for continuous, high production on rocket tube threading

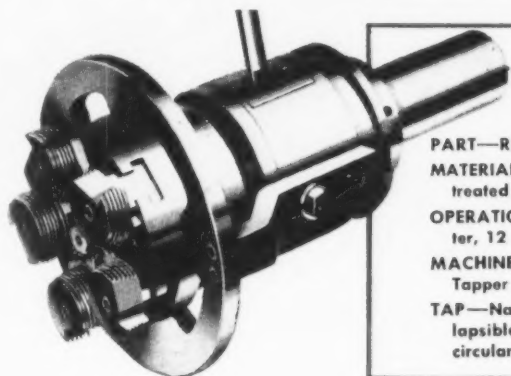
On this rocket job these Namco threading tools outperformed any other method—in time-saving, in sustained quality and in trouble-free operation. The procedures we helped work out for the first pilot installation have since been adopted as standard at ten other plants contracting for the same job.

Regardless of the type of threading work you are doing, may we show you how the same basic principle can be applied to save you time, money and materials—with Namco Vers-O-Tools and Collapsible Taps?



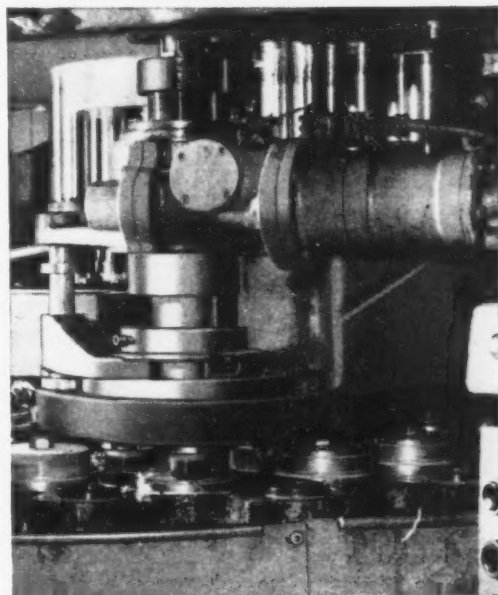
## JOB FACTS

**PART**—Rocket Nozzle  
**MATERIAL**—X 1117 Steel  
**OPERATION**—Thread 4 3/4" Diameter, 12 Pitch, Class 2 Fit  
**MACHINE**—W. F. and John Barnes Drill  
**DIEHEAD**—Namco Type DR 4 7/8" Vers-O-Tool with 6 ground thread circular chasers

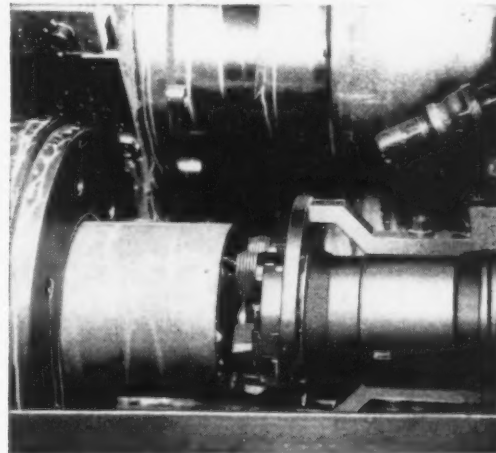


## JOB FACTS

**PART**—Rocket Motor Tube  
**MATERIAL**—NEA-8620 Steel, heat-treated to Rockwell C-28-30  
**OPERATION**—Tap 4 3/4" Diameter, 12 Pitch, Class 2 Fit  
**MACHINE**—Lehman Double-End Tapper  
**TAP**—Namco Type RST 5" Collapsible with 5 ground-thread circular chasers.



Namco Type DR Vers-O-Tool Die Head threading rocket nozzles on a W. F. and John Barnes Drill—Firestone Steel Products Division Plant, Akron, Ohio



Namco Type RST Collapsible Tap tapping rocket motor tube on Lehman Double End Tapper—Firestone Steel Products Division Plant, Akron, Ohio

ASK FOR NEW CATALOG DT-52...

for complete information on Namco Vers-O-Tools and Namco Collapsible Taps, available with ground thread precision chasers.



# The NATIONAL ACME CO.

170 EAST 131st STREET • CLEVELAND 8, OHIO

Acme-Gridley Bar and Chucking Automatics:  
1-4-6 and 8 Spindle • Hydraulic Thread  
Rolling Machines • Automatic Threading Dies  
and Taps • The Chronolog • Limit, Motor Starter  
and Control Station Switches • Solenoids  
Centrifuges • Contract Manufacturing



*Quality Up,*

**costs and rejects down  
WITH CRUCIBLE TOOL STEEL CASTINGS**

The steel part shown above used to be a production headache. A cam for a cotton picking machine, it was originally flame cut from SAE 3730 boiler plate, machined and heat treated. Other difficult steps included end-milling and finish-grinding the cam track. Rejections were high, because the cam often warped during heat treatment.

The problem was solved by casting the cam in Airkool®, a Crucible air-hardening tool steel. When the customer receives the casting from Crucible, all he has to do is finish it, mill the cam track and heat

treat. He doesn't have to finish grind — Airkool is non-deforming when properly hardened and tempered. Machining costs are way down and quality is up, since Airkool resists wear far better than the low alloy steel from which the part used to be made.

Crucible's casting facilities often make it possible to use wear- and abrasion-resisting tool steel for complicated machine parts. We may be able to help you just as we helped the cotton picking machine manufacturer. Get in touch with Crucible today!

**CRUCIBLE**

*52 years of Fine steelmaking*

first name in special purpose steels  
**SAND CASTINGS**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.  
REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS



# Alliance 12-ton

## OPEN HEARTH CHARGING MACHINE

● This photograph shows a new low-type 12-ton Alliance Charging Machine recently installed in one of the world's largest and most efficient steel producing plants.

This machine, designed and built by Alliance, world's largest builder of big cranes, has an unusually large number of exclusive new features that make charging operations easier and less costly.

For instance there's a —

**Spring-loaded pitman** that always keeps the trolley on the rails, providing ample traction for pushing scrap into the furnace and for the retraction of peel and box.

**Box section bridge girder** made of welded I-beams reinforced by diaphragms spaced at 3-ft. intervals.

**Full length machinery deck plate** located between the main and outrigger girders provides lateral stiffness and a safety platform for maintenance.

**Stabilized, shock-absorbing wheels** are held in contact with both upper and lower rails by means of springs, which reduces shock to the operator.

**Four track-equalizer trucks**, located at the corners on eight-wheel bridges, compensate for any irregularities in the track.

**Finger-tip control** provided by new type hydraulic lock rod.

**All gears** (including track wheel gears) are fully enclosed and run in oil.

These and many other Alliance features result in smoother overall plant operation.

Whenever it's a problem of handling heavy materials of any kind at your plant, contact Alliance . . . the world's most respected builder of big cranes.



THE

*Alliance*

MACHINE COMPANY

*World's largest builders of world's largest cranes*

MAIN OFFICE

ALLIANCE, OHIO

•

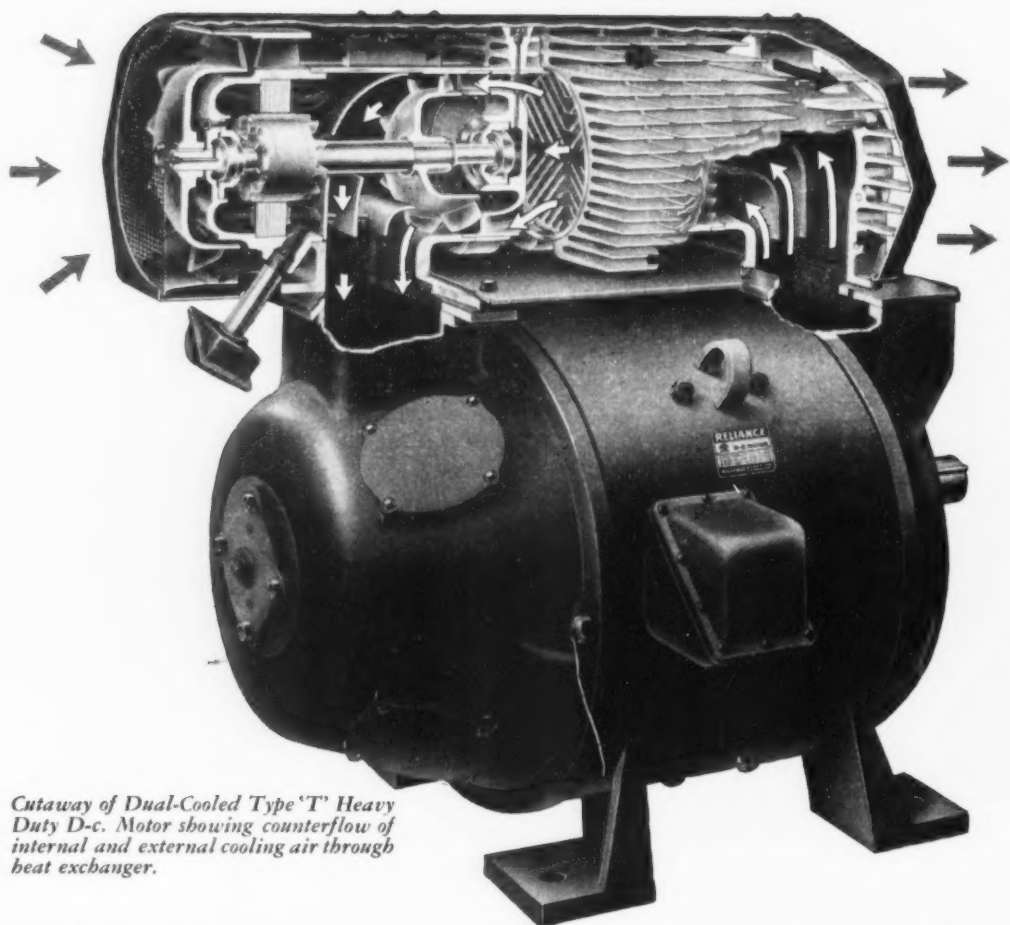
PITTSBURGH OFFICE

1622 OLIVER BUILDING, PITTSBURGH, PA.

LADLE CRANES • GANTRY CRANES • FORGING MANIPULATORS • SOAKING PIT CRANES • STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATION

# RELIANCE *Totally-Enclosed* *Dual-Cooled* D-C. MOTORS

PATENT APPLIED FOR



*Cutaway of Dual-Cooled Type 'T' Heavy Duty D-c. Motor showing counterflow of internal and external cooling air through heat exchanger.*

## for Wider Speed Ranges... Higher Ratings

New Reliance Dual-Cooled Motors provide dependable totally-enclosed, fan-cooled operation over wider speed ranges and higher ratings than were ever before possible . . . and this is accomplished with floor-space savings of up to 30%!

Dual-Cooled Motors are completely enclosed . . . have two separate cooling systems operating independently of the motor speed. One system circulates high-velocity air within the motor, that is cooled in the finned inner duct of the heat exchanger. This heat is dissipated in the other system by

air sweeping through the fins of the outer duct.

The Dual-Cooled Motor is especially adaptable to Reliance adjustable-voltage V\*S Drive and is available in ratings from 15 through 150 horsepower. Explosion-proof Dual-Cooled Motors are available through 100 hp., in conformity with Underwriters and Bureau of Mines specifications.

Whatever your application . . . get further details from the nearest Reliance Sales Office . . . or write for Bulletin C-2201.

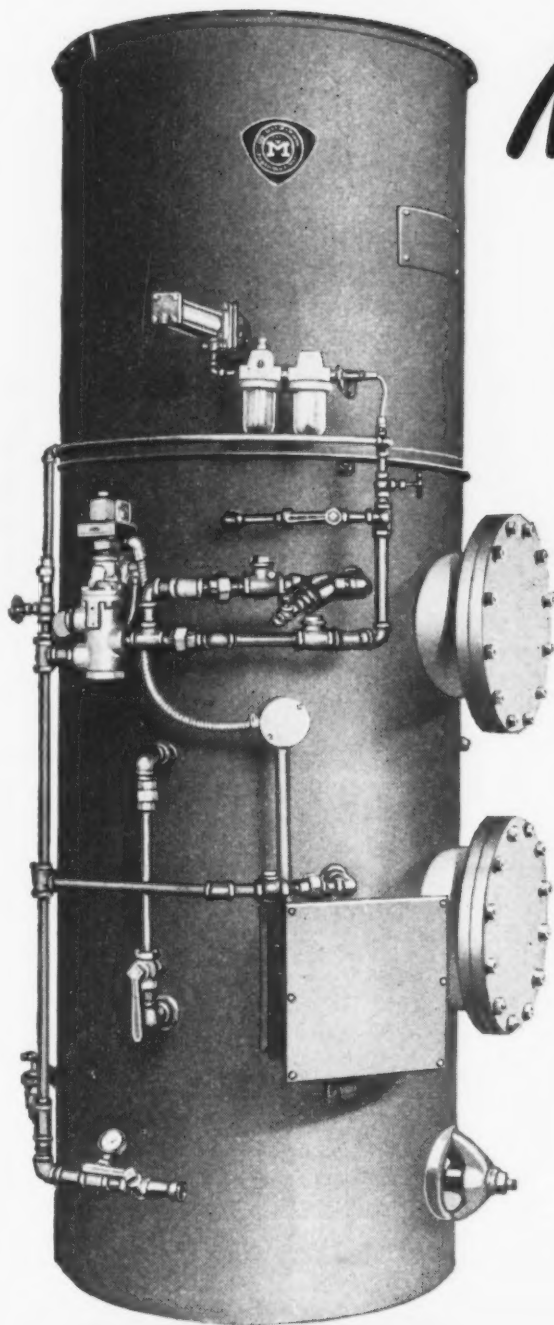
# RELIANCE **ELECTRIC AND ENGINEERING CO.**

1063 Ivanhoe Road, Cleveland 10, Ohio • Sales Representatives in Principal Cities

# MACLEOD ABRASIVE BLAST EQUIPMENT



EST 1897



## ***NEW!*** The Completely Automatic MACLEOD "AUTO-BLAST" ABRASIVE BLAST CLEANING MACHINE

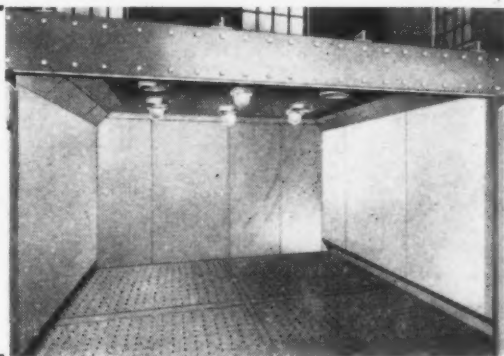
**Self-Contained..Large Capacity..Can Give 24-Hours-A-Day Continuous Blasting If Required**

A completely new Macleod engineering development. A double-chamber blast cleaning machine with a continuous blasting cycle—no shutdown time for reloading . . . greatly reduced labor costs.

The refilling cycle is entirely automatic and does not depend on outside sources—such as a synchronized timing device, or motor-driven pumps or valves. The automatic cycle unit is built into the machine and is not influenced by the type or rate-of-flow of the abrasive. No interchangeable abrasive controls are required and the number and diameter of nozzles is no problem.

The Macleod "Auto-Blast" machine can be used with rooms, tables, barrels, or special automatic devices.

### MACLEOD BLAST CLEANING ROOMS



Available in standard sizes or in special sizes to meet individual needs. Equipped with removable air baffles for longer life. Can be furnished with slot for chain-fall hoist or with rails for blast cars. Macleod manual, semi-automatic, and fully automatic blast machines with non-choke type conveyors and latest-design elevators are available for all sizes of rooms.

Write for additional information or send specifications for estimate.



## The MACLEOD Company

2236 BOGEN ST.

CINCINNATI 22, OHIO, U.S.A.

ESTABLISHED 1897

October 16, 1952

25



# "We expect a lot from



Here, springs and caps are made up into complete spring assemblies . . .

Then the springs are fastened to the bottom of the shipping crate . . .

And the typewriter base is secured to the shipping crate bottom . . .

Then the entire unit is crated. Springs are the only cushioning used.



# m these American Springs"



says **UNDERWOOD CORPORATION**, world famous typewriter manufacturer

**U**NDERWOOD is so quality-conscious that they use a spring-cushioned packing crate for every typewriter shipped out of the country.

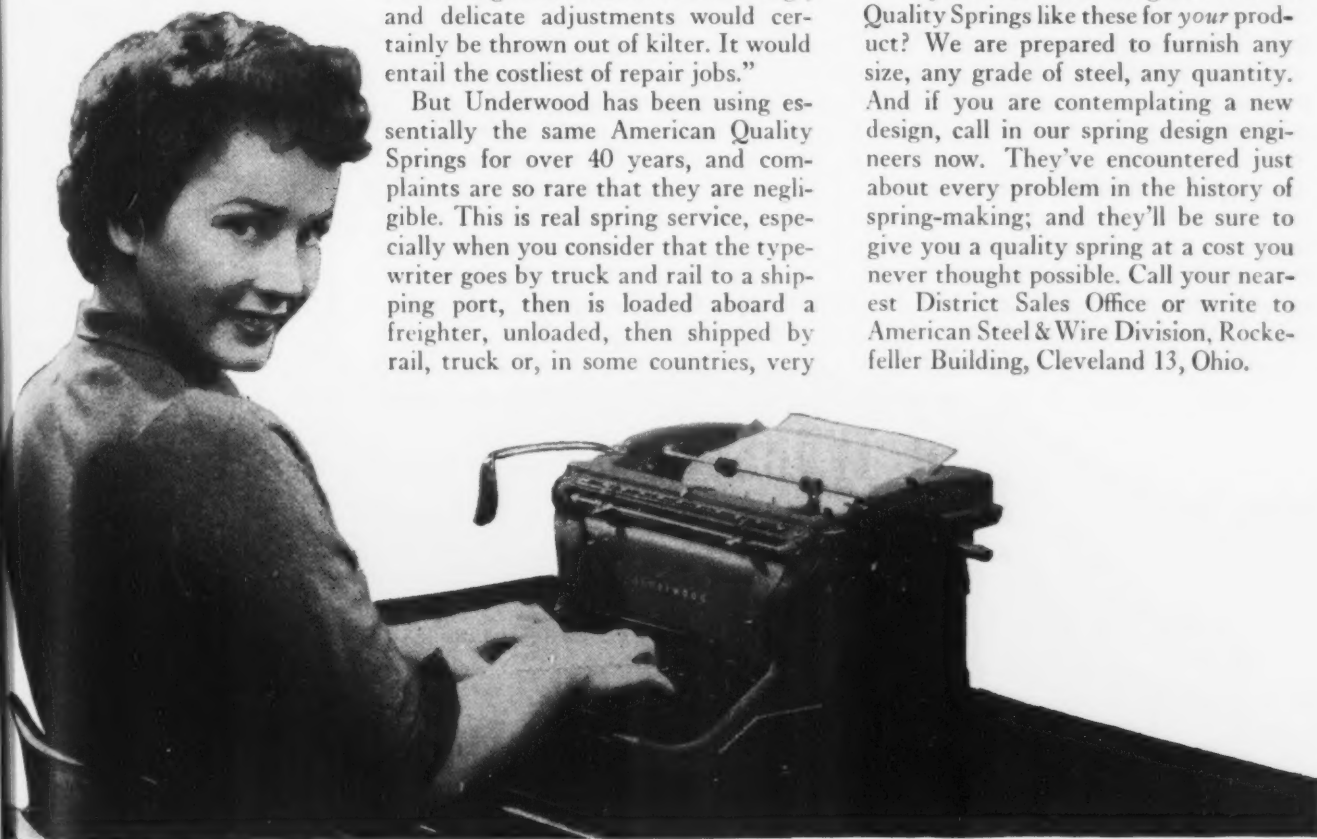
"These cushion springs have to be good," says Underwood, "because we use no other protective cushioning. Spring failure might result in broken castings, and delicate adjustments would certainly be thrown out of kilter. It would entail the costliest of repair jobs."

But Underwood has been using essentially the same American Quality Springs for over 40 years, and complaints are so rare that they are negligible. This is real spring service, especially when you consider that the typewriter goes by truck and rail to a shipping port, then is loaded aboard a freighter, unloaded, then shipped by rail, truck or, in some countries, very

frequently *donkey cart* to some interior town.

As Underwood puts it, "The cushion springs must absorb unbelievably rough handling, jostling and drops. But we have a good reputation for damage-free arrivals."

Why not consider tough American Quality Springs like these for *your* product? We are prepared to furnish any size, any grade of steel, any quantity. And if you are contemplating a new design, call in our spring design engineers now. They've encountered just about every problem in the history of spring-making; and they'll be sure to give you a quality spring at a cost you never thought possible. Call your nearest District Sales Office or write to American Steel & Wire Division, Rockefeller Building, Cleveland 13, Ohio.

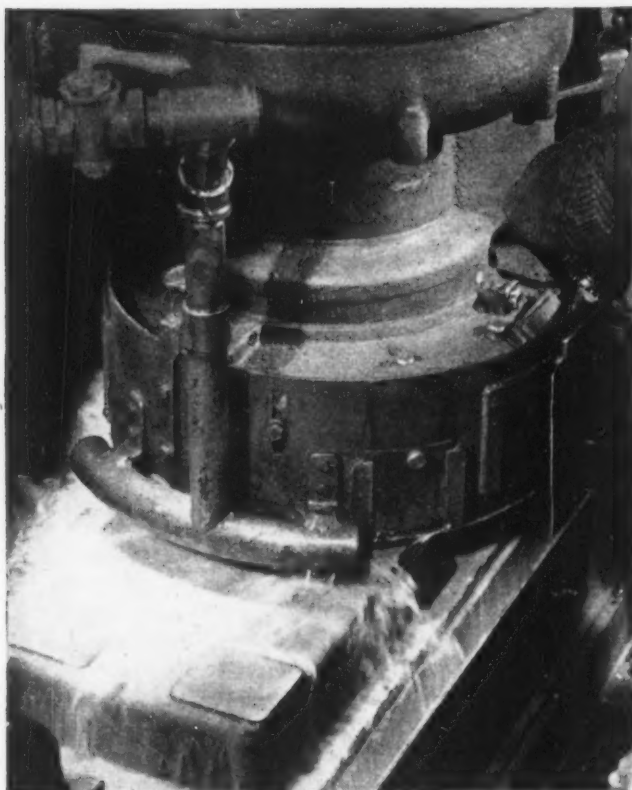


AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY, GENERAL OFFICES: CLEVELAND, OHIO  
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS  
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

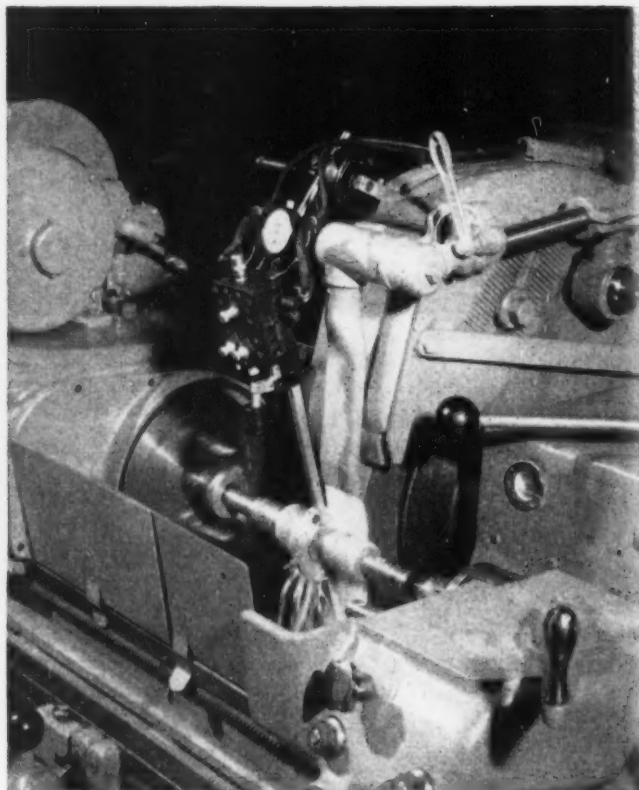


## U.S.S. American Quality Springs

UNITED STATES STEEL



**SURFACE GRINDING.** For fast, cool cutting action Norton wheels, cylinders and segments are unbeatable. 32 or 38 ALUNDUM abrasive for hardened steels and CRYSTOLON abrasive for gray iron and non-ferrous metals.



**O.D. GRINDING.** Norton O.D. wheels in the abrasives, grain sizes and bonds for best results on every material are sure protection for big grinding machine investments.

**NORTON BRINGS YOU**

## More types of abrasive products... for More savings...on More jobs

You'll find the right answers to every one of your grinding problems in the Norton line of abrasive products. First, because it is the world's most complete line — offering you more choices than any other. Second, because Norton Research — which has chalked up an impressive list of "firsts" in abrasive development and Norton's endless field testing — make sure that every Norton abrasive product will deliver top performance on the work it is designed for.

That's the combination of variety and efficiency that will cut time, labor and costs on every grinding job you do.

**SEE YOUR NORTON DISTRIBUTOR** for practical help in any grinding application. He knows Norton products — what they will do and what they won't do — and you'll find that his aid in selecting the right ones for *your* jobs is a real short cut to better, lower cost grinding... **NORTON COMPANY**, Worcester 6, Mass. Distributors in all principal cities. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

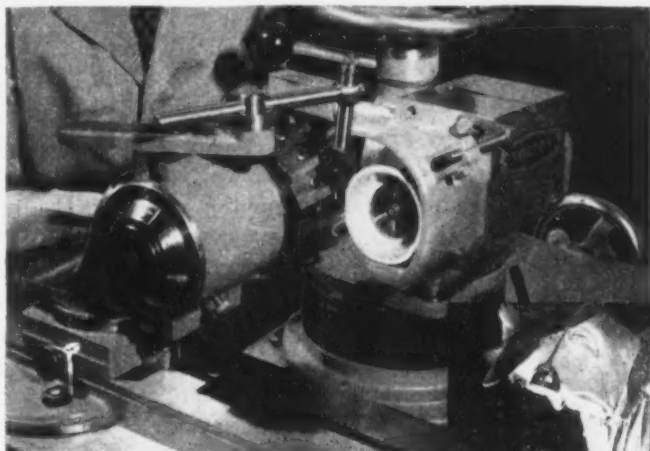
\*Trade-Marks Reg. U.S. Pat. Off. and Foreign Countries



*Making better products  
to make  
other products better*



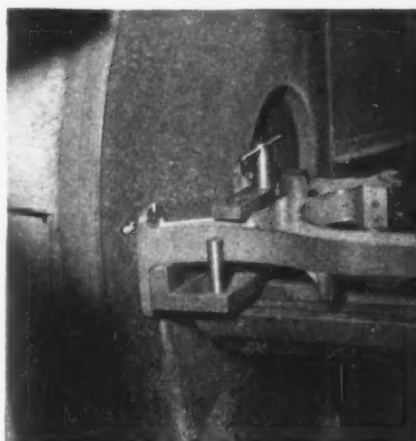
**TOOL AND CUTTER GRINDING.** Norton New-Process wheels have no equal for uniformity, identical wheel performance and long even wheel wear. 32 ALUNDUM\* abrasive for carbon and alloy steel, CRYSTOLON\* abrasive for cemented carbides.



**POLISHING AND LAPPING.** ALUNDUM grain comes in surface treatments and grain sizes for best results on every polishing job. And precise sizing makes ALUNDUM and CRYSTOLON abrasives favorites for even the fussiest lapping jobs.



**ROUGH GRINDING.** On swing frames, floor stands or portable grinders, Norton wheels "hug that work," to cut time and costs. And Norton Reinforced Hub Wheels are the safest, most versatile ever made.



**DISC GRINDING.** Norton ALUNDUM and CRYSTOLON discs boost production and reduce down-time. They leave flat surfaces straight and smooth, with no excess heat to cause warpage.

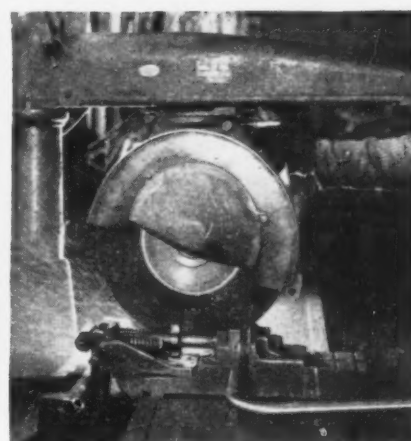


**INTERNAL GRINDING.** Being identical in grinding action, Norton New-Process wheels can be changed without machine adjustments. That and uniform top performance make them valuable production boosters.

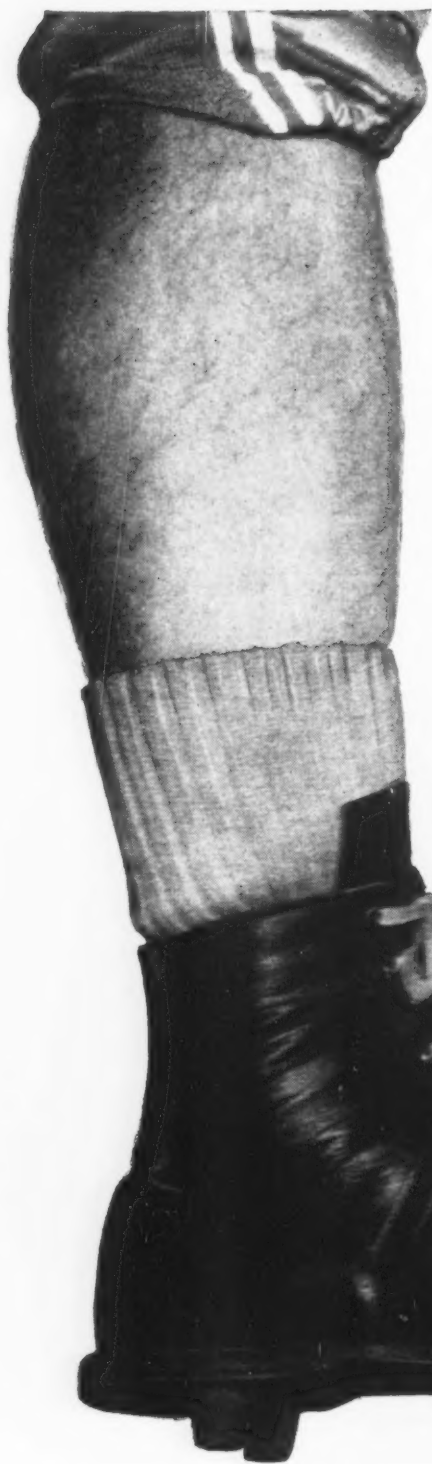


**MOUNTED WHEELS AND POINTS.** Hundreds of sizes and shapes for smooth-as-silk cutting action, with no bounce or vibration. Each one is trued on its own spindle to eliminate "breaking in" and to insure its running absolutely true.

**BARREL-FINISHING.** ALUNDUM tumbling abrasive, being all aluminum oxide, cuts without glazing, and has the hardness and toughness to stand repeated use. It's the abrasive for real precision-finishing.



**CUTTING-OFF.** For wet or dry applications, high or low speeds, on any material, there's a Norton wheel in ALUNDUM or CRYSTOLON abrasive that's "made to order" for fast, economical cutting off.



## *What's the key to a winning team?*

Teamwork, the coaches call it. Coordination.

Making steel is a complicated task in the best of time. And today we're really working under pressure—filling a backlog of orders, trying to make the kinds and qualities of steel you want and still fulfill military requirements and government allocations.

That's why coordination of departments is the No. 1 Rule here at Wisconsin Steel. It's more than just something to pay lip to. It's our way of life.

It enables us to make only promises we can keep, and keep any promises we make. It means that you can count on delivery, when you order steel.

**KICK-OFF!** And the ball spars far down the field, propelled by a husky tackle's 240 pounds of perfectly coordinated muscle. See how the player's foot digs into the ball at the moment of impact, in this A. G. Spalding & Bros. high-speed photo.



**WISCONSIN STEEL COMPANY, affiliate of  
INTERNATIONAL HARVESTER COMPANY**  
180 North Michigan Avenue, Chicago 1, Illinois

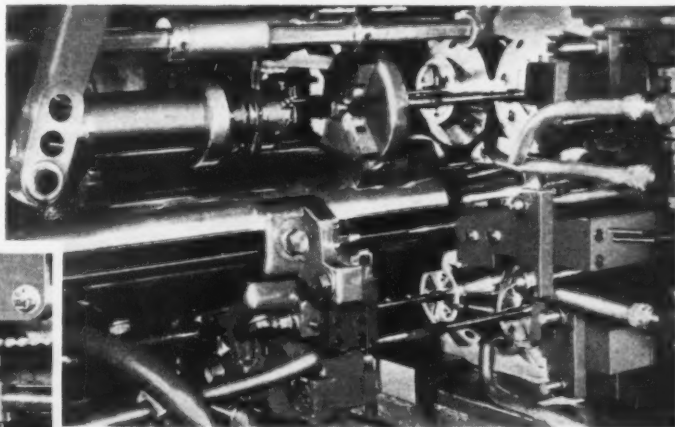
# WISCONSIN STEEL

Although certain types of shaft jobs offer natural opportunity as bar machine work, with the exception of the CONOMATIC, seldom do they appear on multiple spindle bar automatics. In general, shaft jobs require a longer tooling area than do other types of bar work.

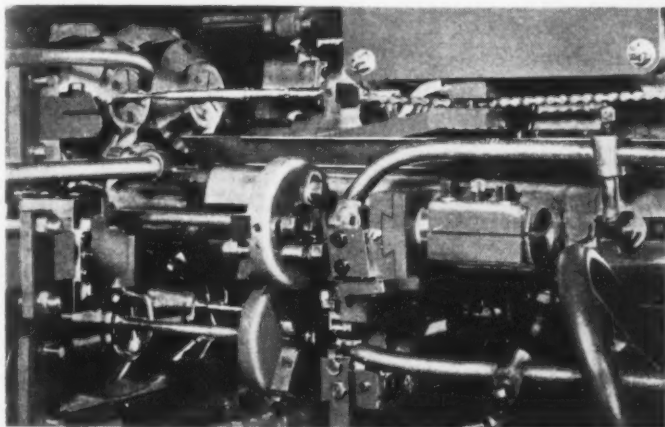
A glance at the frame design of the CONOMATIC explains why its tooling area is longer\* than the tooling areas of other "automatics." And there are more tool positions\* and more room\* for tool setting for *any* type of job.

\*You can have the figures

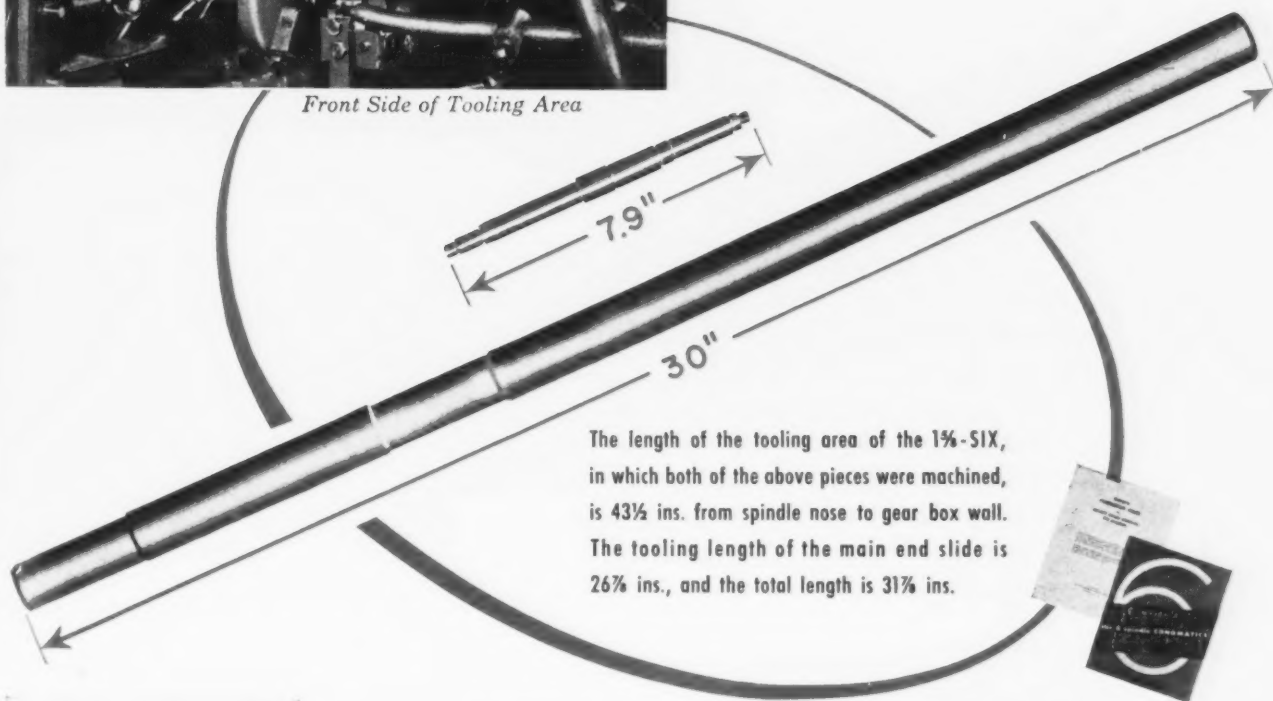
## THERE'S *More* THAN JUST "Elbow Room"



Rear Side of Tooling Area

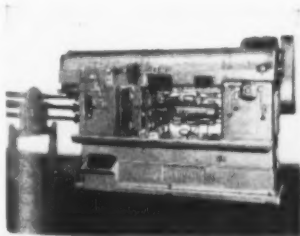


Front Side of Tooling Area



The length of the tooling area of the 1½-SIX, in which both of the above pieces were machined, is 43½ ins. from spindle nose to gear box wall. The tooling length of the main end slide is 26½ ins., and the total length is 31½ ins.

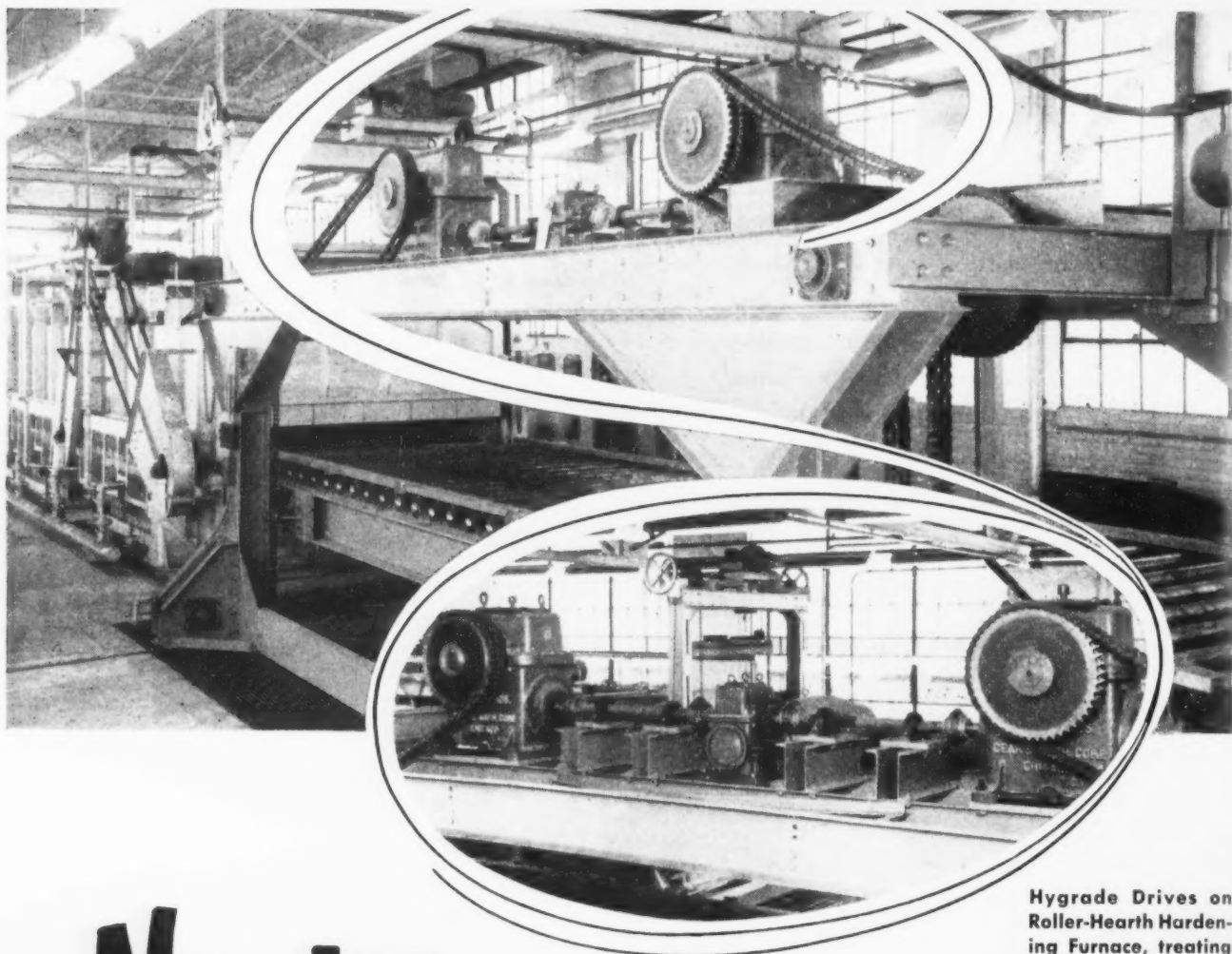
*A Comparison of ALL Automatics is in favor of Cone*



# Conomatic}

CONE AUTOMATIC  
MACHINE COMPANY, INC.  
WINDSOR, VT., U.S.A.



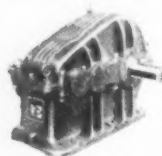


Hygrade Drives on Roller-Hearth Hardening Furnace, treating Carbon Steel and Armor Plate, built by DREVER COMPANY, PHILADELPHIA.

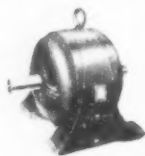
# No JOB FOR A WEAKLING

## FOOTE BROS.

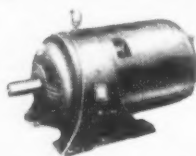
*Better Power Transmission Through Better Gears*



Maxi-Power  
Drives



Line-O-Power  
Drives



Foote Bros.-Louis Allis  
Gearmotors

Handling hot plate is no job for weaklings. This is why the Drever Company chose rugged, powerful Hygrade Drives on this Roller-Hearth Hardening Furnace. These sturdy units not only handle this tough job with ease, but with minimum maintenance.

Wherever you have a speed reduction problem where low cost and rugged dependability are essential, the Hygrade Line of Enclosed Worm Gear Drives offers a solution. Available in a wide range of ratios and h.p. capacities in horizontal and vertical types. Vertical drives are also available with wider low speed bearing span to accommodate long, unsupported output shaft extensions.

Foote Bros. Gear and Machine Corporation  
Dept. M, 4545 South Western Boulevard  
Chicago 9, Illinois

Please send a free copy of Bulletin HGB  
on Foote Bros. Hygrade Worm Gear Drives.



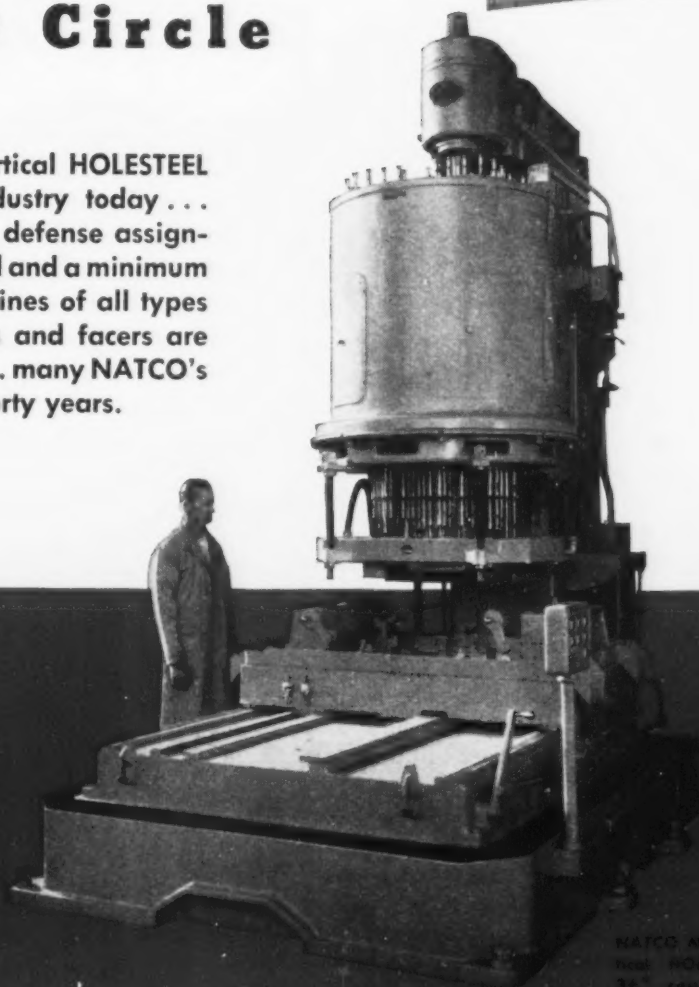
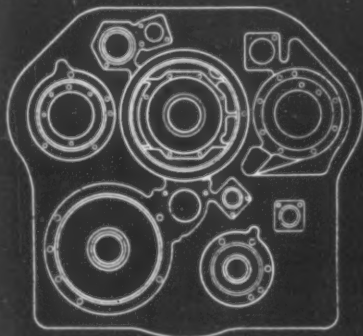
Name.....  
Company.....  
Position.....  
Address.....  
City.....Zone.....State.....

# MAMMOTH NATCO

## Drilling 50 Holes on 36" Bolt Circle

*Natco Engineered  
for  
Quality Production*

NATCO Model C4B Vertical HOLESTEEL drillers are at work for industry today . . . doing tough peacetime and defense assignments with a maximum speed and a minimum of down time. NATCO machines of all types . . . drillers, borers, tappers and facers are veterans of years of service . . . many NATCO's are now in operation over forty years.



### THIS TANK TRANSMISSION PART FOR EXAMPLE:

50 holes in this rear gear case are combination 2 diameter drilled in two minutes . . . 30 parts per hour . . . day in and day out . . . just one example of NATCO economical production.

NATCO Model C4B Vertical HOLESTEEL Driller 36" round head arranged with Slip Type Spindles. Job can be changed by changing slip spindle plate or setting adjustable spindles.



*Call a Natco Field Engineer*  
to help you solve your problems in  
Drilling, Tapping, Boring and Facing



NATIONAL AUTOMATIC TOOL COMPANY, INC., Richmond, Indiana

*Branch Offices*

1809 Engineering Bldg., CHICAGO • 409 New Center Bldg., DETROIT  
1807 Elmwood Ave., BUFFALO • 2902 Commerce Bldg., NEW YORK CITY

# A man who can help you get STEEL!

In these days of great demand, the help of an experienced steel man is especially valuable. Did you realize that the services of such a man are available to you without cost or obligation? This man is your Ryerson steel service representative—a specialist in getting available steel to you quickly.

He cannot make steel, of course, but he does have up-to-the-minute information on our stocks at his finger tips. He does have years of steel experience that often enables him to recommend practical alternates when the steel you need is not on hand. And he does know every phase of Ryerson service from testing for quality to dependable delivery, including heat treating, sawing, shearing, flame cutting or otherwise preparing steel to your particular requirements.

He represents, and has the wholehearted support of, the largest steel-service organization in the world. Working closely with him are Ryerson engineers, metallurgists—authorities on carbon, alloy and stainless steels—ready for quick cooperation on unusual problems.

While we have thousands of tons of steel on hand for immediate shipment, it is spread among 15 plants from Boston to Seattle. And the recent steel



strike, plus continued heavy demand, has unbalanced our stocks badly as to sizes and types. We believe this is the situation throughout the industry.

But your Ryerson service man is always ready to assist you . . . ready to help you scour the country from coast to coast to get the steel you need. So, talk over your steel problems with him the next time he calls.

## PRINCIPAL PRODUCTS

**CARBON STEEL BARS**—Hot rolled and cold finished

**STRUCTURALS**—Channels, angles, beams, etc.

**PLATES**—Many types including Inland 4-Way Safety Plate

**SHEETS**—Hot and cold rolled, many types and coatings

**TUBING**—Seamless and welded, mechanical and boiler tubes

**ALLOYS**—Hot rolled, cold finished, heat treated. Also tool steel

**STAINLESS**—Allegheny bars, plates, sheets, tubes, etc.

**MACHINERY & TOOLS**—For metal fabrication

# RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT  
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



## THE IRON AGE Newsfront

ALUMINUM WINDOW SECTIONS WILL BE PRESSURE WELDED with a new machine now being designed. Pressures of about 20,000 psi will be used and welding requires no heat.

A V-6 ENGINE FOR 1954 CARS IN THE LOW PRICE FIELD is being seriously considered by one major producer. While final decision has not been reached, the big inducement—economy of operation—will have a lot of weight.

COAL'S FUTURE SHOWS STRONG SIGNS OF GROWTH even though it can't match recent spectacular increases in natural gas and oil. Manufacture of coke and electric power together account for about 46 pct of all coal consumption. The former use has increased 39 pct since 1940, the latter has doubled. Hydrogenation and liquid fuels are two bright spots.

SHELL MOLDED REFRACTORIES HAVE BEEN TESTED as a mold material for titanium castings. A 4 pct resin mixed with either stabilized or fused zirconia gave best surface finish. Mold contamination is confined to extreme outer edge of cast section.

SUBCONTRACTORS WILL GET LONG RUN ORDERS IF Defense Dept. has anything to say about it. Right now government officials say many prime contractors with 2-yr orders on books are subcontracting on a quarterly basis. Some primes say frequent change in specs make this more realistic method. Defense officials admit specs sometimes change twice a quarter.

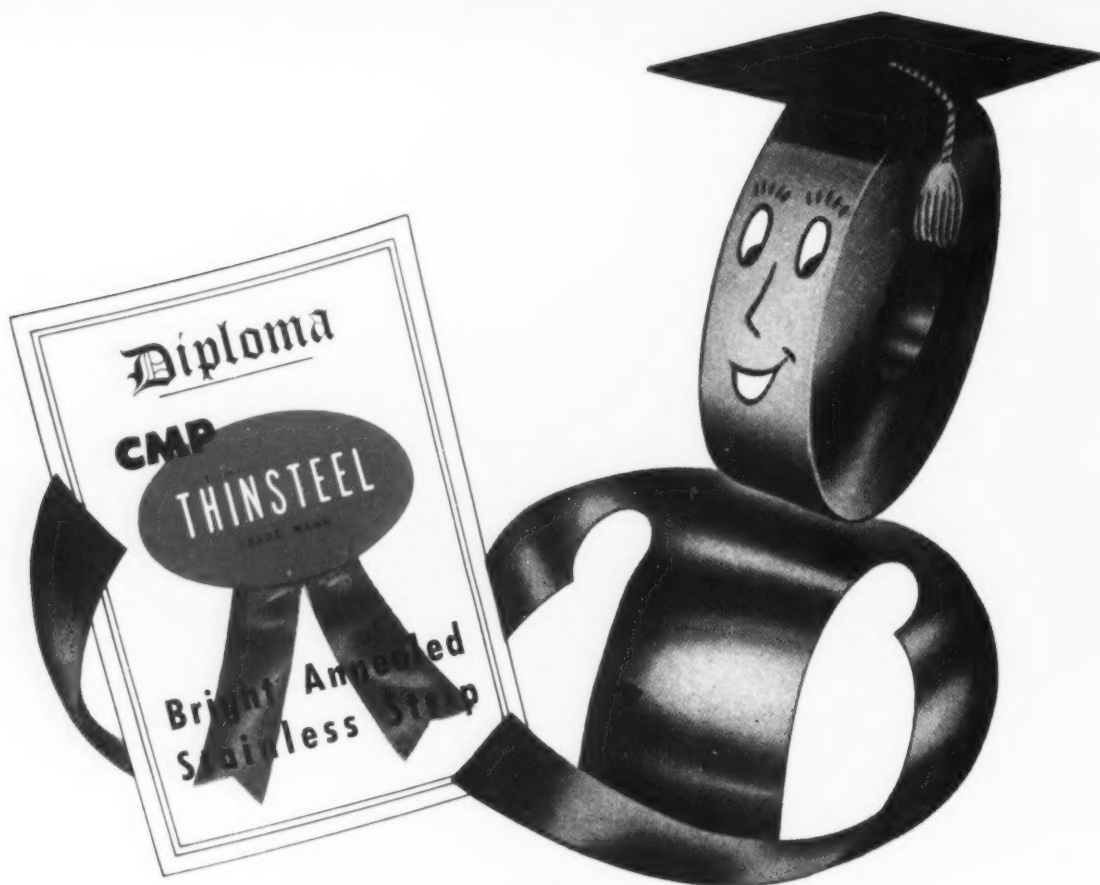
STEEL CAPACITY OF 138 MILLION TONS BY 1960 is predicted by an industry economist. Projections for 1960: Population, 171 million; employed, 68 million; national income, \$318 billion; disposable income, \$265 billion; gross national product, \$375 billion. He believes population growth, defense spending, higher national income will support this capacity.

CRANKSHAFT MACHINING MAY SOON BE COMPLETELY AUTOMATED. It's one of the few auto industry jobs not yet on a full mechanical handling basis. An industry engine plant is installing new equipment for a completely automatic crankshaft line.

ELECTRIC POWER FROM ATOMIC ENERGY IS NOT JUST AROUND THE CORNER. It's still a long way down the road. Biggest users of electric power now are the A-plants themselves. A \$1.2 billion A-plant recently announced will have power stations with capacity 25 pct greater than requirements for New York City.

CHEMICAL DETECTION METHODS CAN'T KEEP UP WITH AEC demands for purity. That puts a premium on new methods, spectrographic research. Hanford works recently called for carbon with impurity of no more than 1/100th of one part per billion.

STEEL ROLLING MILL SPEEDS OF 9000 fpm are getting plenty of attention from mill designers who want to increase productivity. But some present mills designed for 6000 fpm are only run at 4800 rpm. Big headaches are chatter, lubrication waves, tears and maintaining roll contact.



## Now, a **B.A.** in Stainless

Brilliance is often honored with special degrees and other ribbon tied, hand lettered salutations. But this B.A. stands for Bright Annealed and to many stainless fabricators it is as important as money in the bank. You see, CMP Bright Annealed Stainless Cold Rolled Strip beat a costly problem by providing a mirror-like finish on chrome-nickel grades, even in dead soft temper. And that is a big money saver because it can practically eliminate or substantially reduce expensive polishing and finishing.

To find out how Thinsteel Bright Annealed Stainless Strip can improve your production or lower end-product costs write or phone us today. We'll be glad to arrange a sample order for your own comparative test. With labor costs up, a potential saving in your finishing costs is more important than ever before, and worthy of your investigation NOW.



**the Cold Metal Products co.**  
YOUNGSTOWN 1, OHIO

New York • Chicago • Indianapolis • Detroit • St. Louis • Los Angeles • Cleveland

**LOW CARBON, HIGH CARBON (Annealed or Tempered) STAINLESS AND ALLOY GRADES, ELECTRO ZINC COATED ARE AVAILABLE FROM:**

THE COLD METAL PRODUCTS CO. of CALIFORNIA, 6600 McKinley Avenue, Los Angeles  
Phone: Pleasant 3-1291

THE KENILWORTH STEEL CO., 750 Boulevard, Kenilworth, New Jersey  
Phones: N. Y., Cortlandt 7-2427; N. J., Unionville 2-6900

PRECISION STEEL WAREHOUSE, INC., 4425 W. Kinzie, Chicago • Phone: Columbus 1-2700

# VIDEO: Producers Tune In on Brisk Demand

**Improved consumer demand and hope for new markets opening up starts TV industry pushing for output . . . Inventories show sheer reduction . . . Are prices going up?—By T. Metaxas**

There's not a smear of pessimism marring the clarity of the television industry's production picture these days. Jammed-up inventories in factory and distributor warehouses that backed up to short circuit production have shrunk to lean levels. And improving consumer demand is getting good reception from manufacturers who are pushing production to the hilt.

The end of this third quarter saw a total of 3.7 million TV units made—despite the steel strike's curbing some operations. The fourth quarter will see another 1.5 million sets produced to bring 1952's total to between 5.3 and 5.5 million—or roughly comparable to the 5.4 million sets made last year.

**Wears Off**—In 1951, production figures were kept respectable but at the expense of overloading inventory. This has been rapidly shed this year as sales improved. Factory inventory for the week ending Sept. 26 was 172,631 sets. Stack this up against the 715,313 units crammed in factory warehouses in August, 1951.

Because of inventory manufacturers cut back August '51 output to a wan 146,705 units. Manufacturing tempo this August ran at 319,769 units and the industry was just warming up. For a 5-week estimated September period production may climb to 719,000 sets.

The industry is confident that 1953 production will rise higher on the granite base of many new market areas opening up and replacement sales quickening. Production next year is expected to reach 6 million sets. Some add an "at least" to this figure and modify

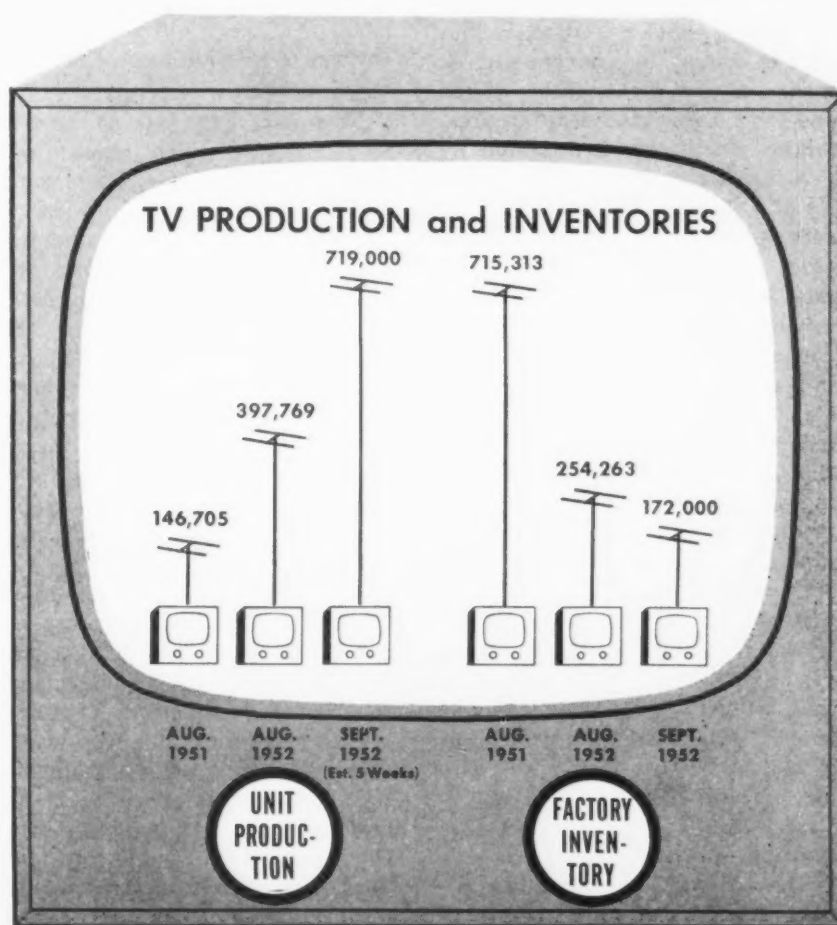
it with "defense requirements permitting." But generally, manufacturers see an improving materials supply.

One major TV producer plans to make 50 pct more sets in this quarter than in the same period last year. Next year this firm plans to produce 80 pct more sets than this year. Other companies are rising to the same great market expectations. Admiral Corp. states its sales are running 20 pct higher than in the same '51 period. Westinghouse claims output

is running 35 pct over the comparable 8 months last year.

**Industry Peppy**—Some firms say they must hunt for enough materials to keep this production momentum going. One company reported it could use more alloy steel kinescopes on which the glass face of the picture tube is bonded. It is experimenting on use of cold-rolled steel instead of alloy. However, sufficient materials are flowing to the industry to keep it peppy and permit ambitious plans.

Most TV makers would like to fan their freshening market. It will be with reluctance that they raise prices in months to come. But the story is the same one





heard in many industries: Higher costs of metals, materials, freight, and labor must force prices up even in competitive markets.

So far most producers have held a firm rein on prices. A few have raised price tags on some models, usually the more expensive sets. Though the price hike is seen inevitable, this industry has, from the perspective of crowding more value into their product, been actually lowering prices. Big screen sets with new electronic improvements are selling at prices equivalent to those paid for early midget-screen video.

**New Stations**—Much of the industry's sales optimism for next year is founded on Federal Communications Commission's licensing new stations following lifting of its freeze. Thousands of applications, many conflicting, are on the FCC docket. The Ultra High Frequency stations will supplement already allocated Very High Frequency stations. When a station is opened in a virgin area it means a new TV market. When one joins a sole station in an area, market potential is invigorated.

A buying rush greets opening up of a new video area. Company records show dealers hasten to stock up on sets weeks before a new station hits the airwaves. It has been shown that an area with a single station may have sluggish buying interest. When another station moves in, sales jump.

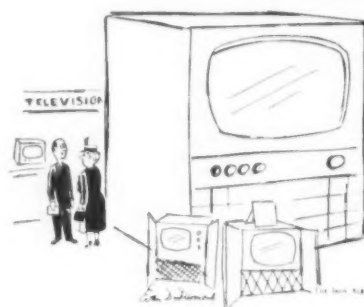
Before 1952 is out, 15 new stations should be operating. Assuming that FCC accelerates its approval rate, 1953 should see this number multiply several times.

**Replacement**—TV manufacturers lay important stress on the replacement market. It's estimated that 50 pct of TV owners have screens less than 16 in. Millions of sets owned are 4 or more years old. There's no doubt that a strong replacement market is showing up already.

The industry is broadening already established or "saturated"

areas by heightening the reception power of its sets. General Electric claims its current models are 267 pct more sensitive than previous ones. Thus the limits of a TV area are pushed outwards. Need for monstrous and expensive antennas is eliminated.

Retailers in many of these "saturated" areas (in larger cities where stations appeared almost overnight years ago) are growling about sales. The boom passed and they have settled down to a



staid market. Because of TV's comparative recency no great backlog of very old sets has yet formed to provide a vital replacement market.

New York City, one of the first and heaviest video areas, was sampled for retailer sales sentiment. Most stores said a traditional seasonal uplift was helping business but the area was still giving discounts off list price to move sets. One distributor said that retailers were generally sour on the market, sometimes unjustifiably so, and were offering up to 25 pct discount, depending on the model. There was also some tightness in availability of some popular models.

**Larger Screens** — Trade-in allowances on old sets were described as overly generous and selling them as reconditioned would not balance out the deficit. Replacement business was a factor here but not a substantial one. One of the large chain appliance stores told IRON AGE sales this year would edge out last year's but that dollar volume would probably be slightly less be-

cause of trade-ins and discounts.

Manufacturers and retailers report customer preference has steadily been focused on larger and larger screens. The 21-in. screen set has climbed in popularity and is threatening to unseat the 17 incher. Retailers say customers first walk to the ranks of 21-in. sets but that pocketbooks frequently march them over to the 17-in. screens. More 17-in. sets are being sold but the sales trend points to larger screens.

More production difficulties are imposed on manufacturers because of the popularity of the 21-in. sets. They have more parts, take more assembly line time.

**Color Coming**—The great blurb of publicity accorded advent of color television actually slowed both replacement and new sales as customers shied away on the assumption any set now on the market would be made obsolete. These apprehensions are wearing away. The industry feels that color TV may start at a piddling level in 1954 or 1955. But real commercial development will take years.

Color sets now need up to 50 tubes as against the average 20 used in black and white. Color video will be more expensive and advertisers won't back the movement in mass for some time.

When color does finally arrive the industry feels it will be an electronic system rather than the mechanical one offered by CBS.

**Loaded for Bear**—Most intensive research of the industry is trained on UHF developments. Manufacturers are loaded for bear and are ready to capture new UHF markets as they spring up.

The industry feels it should not have to strain too hard to meet growing demand. A few fears were expressed that while assembly lines producing receivers could stand any fast gait, a hindrance to quick market development may be handling orders for station broadcasting equipment.

## STRIKE LOSS:

More than 2 million kw generating capacity scheduled, lost for '52.

About 2.5 million kw of new generating capacity scheduled for 1952 will not materialize. The electric power industry was having materials troubles before the steel strike and the prolonged stoppage has aggravated its difficulties.

Taking stock of the effects of the steel strike on electric power equipment and expansion, the Electric Power Survey Committee of Edison Electric Institute estimates that in addition to the 2.5 million kw lost this year, another 1.3 million kw expansion slated for 1953 will not be completed until 1954.

Despite this gloomy outlook, shipments of heavy power equipment during the first 7 months of 1952 approach the total shipped during all of 1951. This indicates how much manufacturers have stepped up their operations in spite of shortages.

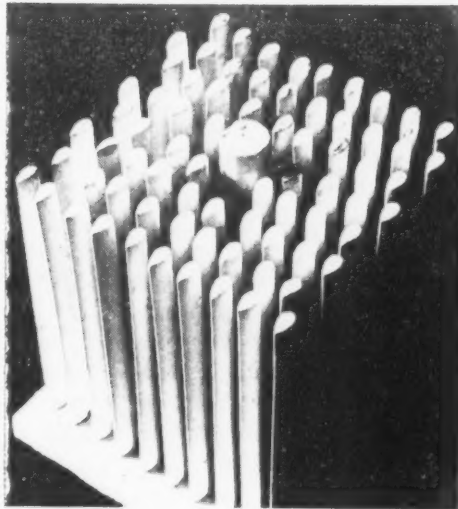
**Losses Vary**—Manufacture of steam turbine-generators during the first 7 months of the year was about 10 pct less than originally scheduled. Most of these delays were caused by materials problems that developed before the steel strike. For other equipment, shipments have fallen off 20 to 35 pct from scheduled rate.

Because of the long manufacturing cycle, delays in production of equipment resulting directly from the steel strike will not be fully felt until late 1952 and all through 1953. Steam turbine-generator, water-wheel generator, boiler and transformer manufacturers still expect to meet most of their present schedules for 1952.

Estimates of shipment losses for 1953 resulting from the steel strike run from zero in the case of transformers up to 15 or 20 pct for large steam turbine-generators and boilers.

Government has been informed of critical boiler situation and, while it acknowledges the condition, has done nothing to speed up the flow of needed materials, reports EEI.

## Catalysts Recover Heat From Wastes



CATALYSTS: Cross-section shows alumina and platinum coated porcelain rods in Houdry unit.

Savings to industry of hundreds of millions each year through converted wastes are forecast on the basis of experiments with Eugene F. Houdry's waste burning catalyst at Sun Oil Co.'s Marcus Hook, Pa., refinery.

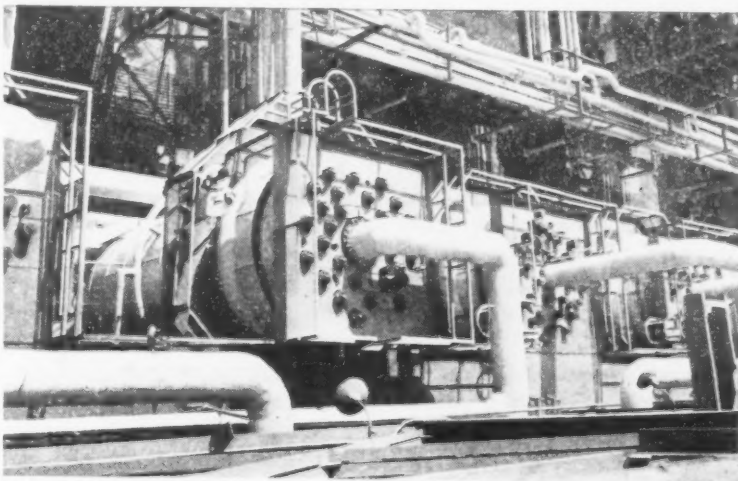
The catalysts, made by Mr. Houdry's Oxy-Catalyst, Inc., received wide mention when installed at Enamel-strip Corp.'s Allentown, Pa., plant earlier this year (THE IRON AGE, June 26, 1952, p. 61.)

Sun Oil has made a partial installation on one petroleum-cracking unit at Marcus Hook, and reports savings of \$27,500 per year. This will jump to over \$80,000 when the installation is completed.

Further applications at Sun's Marcus Hook and Toledo refineries should save the company an estimated \$500,000 annually.

Waste carbon monoxide and hydrocarbons are burned in the platinum-alumina catalyst as they escape from petroleum-cracking reactors. Most of the heat generated (80 pct) is carried off by molten salt in pick-up tubes to make steam. Balance is used to boost heat of flue gas driving a gas turbine. Sun expects to triple the heat saving of 7.5 million Btu per hr when a second reactor on the cracking unit is equipped with catalysts.

Cost of the Sun installation was limited virtually to the cost of the catalyst itself—\$25,000, because the company was able to adapt previously built plant and equipment. More representative is a unit planned for another large eastern refinery. Total cost would be \$107,000, with an estimated annual saving of 20.6 million Btu per hr—equivalent to \$120,000 worth of steam each year.



SALVAGE: Houdry units create 7.5 million Btu per hr on this Sun Oil Co. reactor.

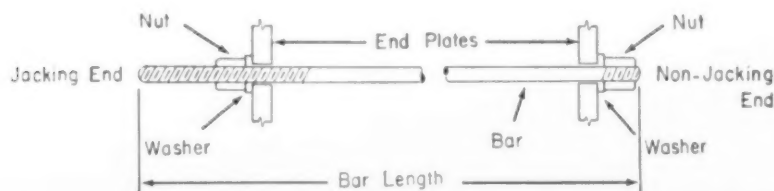
## PRESTRESSING: Will Bars Boost Use?

**Newly-formed firm marketing special tensioning bars to replace wire in prestressed concrete . . . Cuts labor time, costs . . . Competitive with reinforced concrete—By G. G. Carr.**

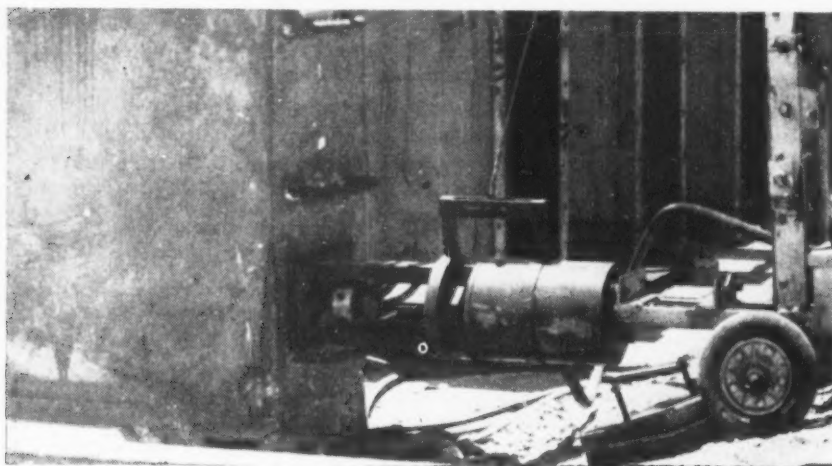
Construction engineers used to just look wistful when prestressed concrete was mentioned. Tensioning steel reinforcements to give concrete greater permanent compression than the tensile stresses it will carry under load solves a lot of problems. It's been widely

coldworked alloy steel bar, plus a new anchorage device, in place of wire. It is now being marketed here by the recently formed Stressteel Corp.

Anchorage units consist of a long-tapered thread engaged with a nut of matching thread. This



IN USE: Above, components of a Stressteel tensioning unit. Below, jack has elongated bar, and anchor nut is ready to be run home.



used in materials-short Europe. But labor costs here put it out of reach for most contractors.

Post-Korea structural steel shortages brought new interest in the technique, in spite of the expense. (THE IRON AGE, Apr. 24, 1952, p. 91.) But it still took 130 to 150 manhr per ton to install and tension the cables. And high quality wire is expensive, too.

**New Way** — A new method, known as the Lee-McCall system, could change this picture radically. Developed in England, the system calls for use of a special

develops 100 pct of the ultimate bar strength. Nut bears against a steel plate which distributes terminal forces at a safe unit loading at the ends of the prestressed member.

First application in the U. S. was made by the Preload Corp. in 1951 on the 17,422-ft trestle sections of the Pinellas-Manatee Crossing over Tampa Bay. Preload found it the only way to make prestressed design competitive with reinforced concrete on this job. The company told THE IRON AGE it is now using the system successfully in other designs.

Easier—Placing, stressing and anchoring of prestressing wire is necessarily a complex, lengthy and costly process. One bar can do the work of several high tensile wires. Stressteel claims that a bar 1 1/8 in. in diam does the work of 22 wires each of 0.196 in. diam.

Prestressing bars need no special handling. Similar in size and shape to reinforcing bars, they are familiar to construction workers. All the worker has to do is place them in the form.

Stressteel says its bars may be placed, stressed and anchored with only 25 to 45 manhr per ton, against 130-150 manhr per ton for wire. The company claims that labor savings alone will exceed the cost of the bars on many jobs.

**Cheaper**—Bars run 18¢ to 23¢ per lb, depending on length. On the Tampa Bay bridge job winning bid was \$140,000 lower than the low bid for reinforced concrete. Estimates for prestressing with wire ran \$225,000 more than bar prestressing.

Following the successful Tampa Bay application, a group of Canadian and American businessmen formed Stressteel Corp. to produce and sell the tensioning units in this country. Units are presently being imported from England, but negotiations for a plant in Pennsylvania are almost complete.

Manufacturing will consist of coldworking 92-60 bars, alternately stressing and relieving the steel to reach a minimum ultimate stress of 145,000 psi. Details of the process are so far confidential. Bethlehem will be a chief supplier, but U. S. Steel is also reported as interested.

**Specifications** — Physical properties of the prestressing bar, in addition to the minimum ultimate stress, are:

Minimum stress at 0.7 pct elongation:	130,000 psi
Minimum stress at 0.3 pct elongation:	75,000 psi
Elongation in 10 in.:	
For 145,000 psi ultimate stress.....	6 1/2 pct
For 155,000 psi ultimate stress.....	5 1/2 pct
Modulus of elasticity.....	25-27 million psi



## EQUIPMENT: How to Move Materials

**Materials handling is open field for producers seeking way to cut costs . . . Must adapt equipment to plant, process . . .**

**Facts on fork trucks, tractor, crane—By K. W. Bennett.**

The more times a product and its components are handled the higher the costs of manufacturing. That explains the interest in materials handling equipment and why more firms are exploring this field as a cost-cutting means.

To successfully adapt materials handling equipment the manufacturer must know his plant, his product, and his process. The materials handling sales engineer will want to know physical dimensions of the plant, elevator capacity, ramp inclines, loading area capacity, etc.

**Type of Load**—That's just part of the job. He must also be told what type of load is carried and by what method; the number of units handled per load transfer and per day; the weight per load transfer and per day; the number of locations to be visited; distances and routes, etc.

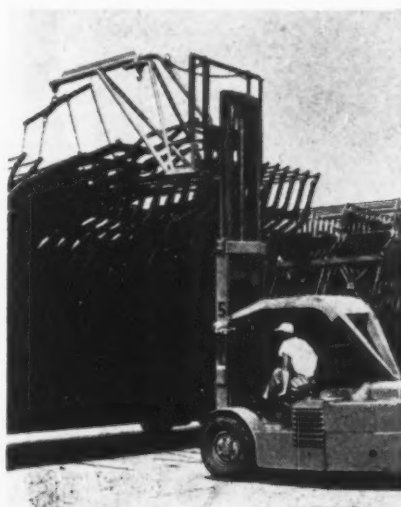
Several rules of thumb may prove helpful to buyers. A lift truck is good for about 200 to 300 ft of travel. Beyond that a tractor or a tow truck may be more feasible. A fork truck, having a load lift of as much as 17 ft, may be better if there is plenty of vertical storage space. For cramped loading areas small hand trucks and stackers may be most suitable.

Materials handling equipment falls roughly into three classes: The lift truck, the tow truck or tractor, and the light crane.

**Fork Trucks** — The hydraulic lift trucks, or fork trucks are versatile, speedy, and powerful. A hand-powered hydraulic lift is available that has a capacity of 750 lb. It will lift this load 52 in. The unit retails at around \$236.50, which is about the bottom of the lift truck price range. There are several models of this type available, ranging up to a 1000 lb capacity fork of the "walker" type with an 80 in.

lift, battery powered, selling for \$687.50.

Another builder lists forks with up to 7500 lb lifting capacity and these will lift their load to 140 in. Lighter models offer 3000 lb capacity with a lift of 146 in. They are



**LOADING:** Fork truck with special rig stacks auto frames on freight car.

available in both gasoline and diesel powered models.

They range from 4950 to 9635 lb in weight. One walker model offers capacities to 3000 lbs, will lift to a 130 in. height. Yet even in the heavy-duty sizes the units have a body length of only 65 in. The fork adds another 34 in. On a level stretch, some fork trucks will move at speeds up to 23 mph.

The gap between the 1000 lb and 3000 lb capacity in the previously listed fork trucks is filled by a line offering fork trucks with lifting capacities from 2000 lb to 16,000 lb, with lifting heights ranging from 9 ft to 17.5 ft, and speeds of from 9 to 23 mph.

Accessories make the fork truck the most versatile member of the materials handling team. Available are scoops, clamps, rams, fork extensions, load safety racks, side

shifters, brick and concrete forks, clam shells. They pick up anything from bundles to foundry sand.

**Mobile Crane**—A blood relative of the original fork-truck-with-crane-attachment is the mobile crane. The cranes are not large. One model offers 10,000 lb capacity, has an electric motor. Another crane has a possible boom elevation of 19 ft, is gasoline powered and has four forward and four reverse speeds. It has a load lifting capacity of 10,000 lb.

The boom is locked in one of five positions before the hoist is begun. This unit weighs 11,400 lb, and has a 152 in. turning radius. These are widely adaptable but have proved most successful in loading or unloading gondolas, flat cars, etc.

**Tractor**—The third member of the materials handling team is the tow truck or tractor. Some small plants have rigged their fork trucks as tractors with the addition of a trailer hitch, but the fork lift is not designed for such a job and might be wasting its versatility if a portion of its time is used in long, straight hauls.

Straight pulls of 200 ft or more are the province of the tow truck, material handling specialists have indicated.

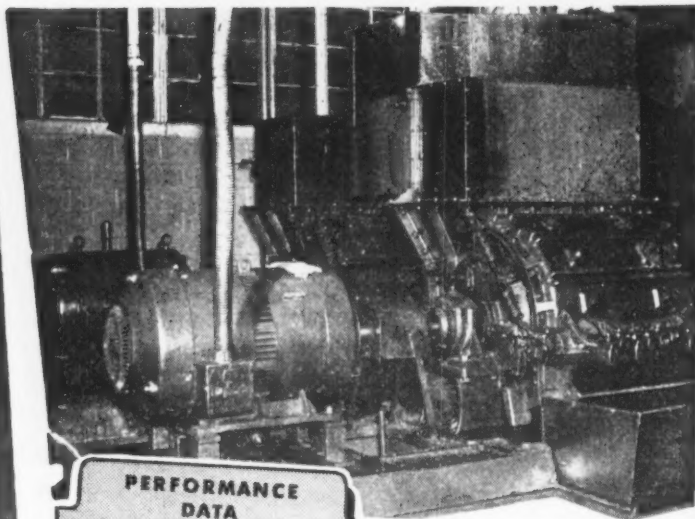
**Hand Lift Trucks**—The hand lift trucks, next on the scale, run from around \$420 to \$1790. They have load capacities of 4000 to 6000 lb. Where material is bulky but light, and floors smooth enough, the operator can link together several of these hand trucks to form a train. The hand lift trucks are also available with a fork for use with standard pallets.

The tow truck, like the fork lift, is offered in number of powered walkers, with the operator walking in front or behind, steering with a "T" handle. One variation, available in walker models or a conventional tow truck, has a removable, packaged power plant. Diesel, electric, or gasoline powered tow trucks are offered with tow capacities of 700 to 20,000 lb at speeds of 2.5 to 15 mph.

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Case History No. 15

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## PERFORMANCE DATA

TWO CRUSHERS:	Model 3800's
AVERAGE AGE:	35 months
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PARTS COST:	to date, for both crushers: \$1599.80
COST PER TON:	\$0.03, including standby parts

THE experience of many blue chip manufacturers have shown that there are three important profit sources in every American installation: (1) American-reduced chips bring \$4 more per ton on scrap market (2) Up to 50 gallons of recovered cutting oil per ton of reduced turnings (3) less storage . . . easier handling.

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## Expansion

### Brass Plant for West Coast

The West Coast now has another brass and bronze ingot smelting plant. It was opened this week by H. Kramer & Co., Chicago, at 631 S. Aviation Blvd., El Segundo, Calif. Of course, the plant has the latest equipment to prevent smog—in conformance to strict local regulations.

The plant is located on a 23-acre site, containing production facilities, laboratory, and offices. Included in the equipment are two 66-ton reverberatory, two rotary type, and a number of tilting furnaces, a cupola, and a radiator sweater.

An innovation for a plant of this type is a quantometer, self-reading spectrograph. Smog equipment consists of a dust collector to gather up zinc oxide and other waste particles.

### Contract for Titanium Research

The Air Force has awarded a contract to Ryan Aeronautical Co., San Diego, for research and development of titanium. Work for the Air Force is to determine the best means of processing titanium for use in conjunction with exhaust systems.

### Niagara River Blast Furnace

Niagara River Steel Corp. has been granted a certificate of necessity permitting accelerated amortization on 85 pct of a \$40.3 million pig iron-coke plant in the Buffalo area.

This is the second largest certificate approved by Defense Production Administration in its latest listing.

Approval covers one complete blast furnace, a battery of 55 coke ovens, and by-product facilities.

Location is between the Niagara River and Erie Canal near Buffalo.

Directors of the firm include A. F. Franz of Colorado Fuel & Iron Corp.; George Carvlin, a vice-president of Koppers Co., Inc.; Wiley Moor, Sr., of U. S. Oil, Pure Oil, and Eastern Airlines; and Louis M. Lean, a Philadelphia banker.

# BARGES: Shipment Curve Goes Up

Inland waterway cargoes increase steadily since 1930 . . . Demand for space rises . . . But petroleum shipments decline . . . Operators try for more efficiency—By K. W. Bennett.

What barge men have called the "Big Load" was getting bigger. Barge traffic on the Mississippi had climbed 8 pct in 1951 over the figure for the previous year. In 1952, the Tennessee moved into pace-setting position, with an announced 50 pct increase in water shipments over the previous year.

The figures seemed good. They sustained the rising curve in water shipping rates that can be traced at least as far as 1930. But beneath the curve, other movements were beginning to take shape in inland waterways planning.

**Distrust**—Contract carriers were watching petroleum, once a mainstay in Mississippi River shipping, with something more than distrust. In a period when most commodities, both bulk and packaged, were calling for more shipping space, oil carriers were lowering rates, paying upkeep on additional idle barges. A few barge owners were calling the petroleum fall-off a definite trend and one that could be expected to continue.

Their reasons: Opening of oil fields closer to the ultimate user, as in Montana and Dakota, pipeline expansion, too much competition.

Similarly, barge owners were ruefully studying rising costs and reinspect their equipment, moving toward semi-integrated tows, more powerful engines, triple-screw power boats, more streamlined barge shapes.

**Efficiency**—Two moves are underway to increase barge efficiency. The old overhang is being eliminated on many barges now on the ways. Thus the sheer of the bow and stern will extend from the bottom of the barge to the top, eliminating the bow-wave that would pile up before the bluff upper portion of the barge as it

was pushed up-river against rough water.

Second move for more efficient utilization of power is the semi-integrated tow. Two barges are sheared off, made straight at one end. These are then pushed together to form one long "barge" of two separate, watertight sections.

One barge operator estimated the actual increase in towing efficiency at about 20 pct.

And barge operators, with increasing demands for shipping space are beginning to check their terminal facilities. In the South, docks seem good. Along the Ohio and to the East, facilities are adequate or better. Chicago is however, a particularly sore spot,

with only three major barge terminals for public use.

**Integrated Tows**—The Federal Government, through federal barge lines, has been seeking to offer rapid service to smaller shippers, people who would ship less than carload lots. Their best known tow for this purpose is the *Harry S. Truman*, Chicago to New Orleans, a fully integrated barge tow that leaves Chicago every Tuesday and arrives in New Orleans 1 week later.

The fully integrated tow consists of 11 barges, aggregating 1200 ft in length. It moves swiftly, allows for a variety of small cargoes. Private barge operators are not sanguine over the future of the fully integrated tow, however. They feel it is expensive to operate, difficult to manage economically. It will be a considerable time before the integrated tow is adapted

## STEEL: Finished Shipments Totals in July

As reported to the American Iron And Steel Institute

STEEL PRODUCTS	CURRENT MONTH					TO DATE THIS YEAR				
	Carbon	Alloy	Stainless	Total	Pct of Total Shipments	Carbon	Alloy	Stainless	Total	Pct of Total Shipments
Ingot	44,801	8,145	456	53,404	3.8	361,624	144,107	10,790	516,521	1.5
Blooms, slabs, billets										
Tube rounds, sheet bars, etc.	56,916	9,349	523	66,788	4.7	848,019	267,810	9,664	1,125,493	3.3
Skelp	46			46		53,388			53,388	0.2
Wire rods	12,893	78		12,971	0.9	350,563	7,567	3,188	361,318	1.1
Structural shapes	28,403	372		28,775	2.0	2,045,220	29,079	37	2,074,336	6.0
Steel piling	962			962	0.1	112,964			112,964	0.3
Plates	99,251	5,710	1,189	106,150	7.5	3,515,179	184,350	14,110	3,713,639	10.8
Fails—standard	1,935			1,935	0.1	669,068	130		669,198	1.9
Rails—all other	1,421			1,421	0.1	61,797	48		61,845	0.2
Joint bars	422			422		56,773			56,773	0.2
Tie plates	789			789	0.1	187,956			187,956	0.6
Track spikes	346			346		47,906			47,906	0.1
Wheels	12,213	131		12,344	0.9	184,590	352		184,942	0.5
Axles	1,042			1,042	0.1	83,069	152		83,221	0.2
Bars—hot rolled	94,031	35,047	1,235	130,313	9.2	3,025,252	991,692	24,371	4,041,315	11.8
Bars—reinforcing	35,486			35,486	2.5	883,319			883,319	2.6
Bars—cold finished	35,242	9,311	1,470	46,023	3.3	804,083	172,351	25,859	1,002,293	2.9
Tool steel	665	4,888		5,553	0.4	12,246	60,238		72,484	0.2
Standard pipe	27,668		1	27,667	2.0	1,207,479	208	7	1,207,694	3.5
Oil country goods	29,632	1,668		31,300	2.2	731,030	69,156		800,186	2.3
Line pipe	55,369			55,369	3.9	1,549,660	119		1,549,779	4.6
Mechanical tubing	18,630	9,026	255	27,911	2.0	341,395	149,379	3,649	494,423	1.4
Pressure tubing	9,371	586	168	10,125	0.7	187,704	20,048	5,704	213,456	0.6
Wire—drawn	64,427	1,318	520	66,265	4.7	1,288,183	28,003	15,561	1,331,747	3.9
Wire—rails, staples	11,681			11,681	0.8	349,061		20	349,081	1.0
Wire—barbed, twisted	4,053			4,053	0.3	124,476			124,476	0.4
Wire—woven fence	12,197			12,197	0.9	193,585			193,585	0.6
Wire—bale ties	996			996	0.1	44,069			44,069	0.1
Blackplate	17,212			17,212	1.2	485,882			485,882	1.4
Tin & ternplate—hot dipped	39,464			39,464	2.8	651,661			651,661	1.9
Tinplate—electrolytic	25,112			25,112	6.0	1,444,453			1,444,453	4.2
Sheets—hot rolled	122,291	4,005	994	127,290	9.0	2,959,150	108,820	14,378	3,082,348	9.0
Sheets—cold rolled	207,533	2,290	2,688	212,509	15.0	3,818,406	40,461	54,701	3,913,568	11.4
Sheets—galvanized	56,254			56,254	4.0	959,353	40		959,393	2.8
Sheets—other coated	8,640			8,640	0.6	111,136			111,136	0.3
Sheets—enameling	1,110			1,110	0.1	75,761			75,761	0.2
Electrical sheets, strip	1,025	17,893		18,918	1.3	41,102	268,114		309,216	0.9
Strip—hot rolled	35,074	168	1	35,243	2.5	878,639	14,953	2,089	895,681	2.6
Strip—cold rolled	52,148	1,151	5,705	59,004	4.2	818,473	10,672	68,474	897,619	2.6
<b>TOTAL</b>	<b>1,287,351</b>	<b>111,116</b>	<b>15,205</b>	<b>1,413,672</b>	<b>100.0</b>	<b>31,561,844</b>	<b>2,567,851</b>	<b>252,602</b>	<b>34,382,297</b>	<b>100.0</b>

During 1951 the companies included above represented 98.5 pct of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.



## BOMBINGS: Plants Were Still There

**German industry's survival under World War II bombings no assurance in A-bomb era . . . Air raids on German plants were only 2.5 pct effective . . . Damage claims overrated.**

Charred remnants of the Hiroshima and Nagasaki bombings merely suggest the destructive impact of atomic war. The A-bomb's potential makes the blockbuster obsolete.

Little consolation can be gained from the fact that mass bombings of the last war were ineffective in knocking out industry. Despite the much-publicized 1000 plane raids, survey of German industrial centers after the war proves industry can withstand this type of attack. When the Allies took over in 1945, German iron, steel and coal industries were still physically capable of operating at 92 pct of capacity.

**Damage Overrated**—A top gov-

ernment official told THE IRON AGE that Allied bombings of German industry were only 2.5 pct effective. Damage claims were vastly overrated. For example, when Air Force photographs showed a steel mill with its roof blown off, the plant was scratched as being completely destroyed. Investigation after the war showed that in most of these plants, machinery and furnaces were virtually unscathed.

These reports should not give U. S. industry a false sense of security, however. Only 20 atom bombs would be needed to equal the explosive force of all the bombs rained on Germany throughout World War II.

Instances of industry's ability to survive strategic bombings dur-

the last war are numerous. Frankfurt was leveled by Allied attacks. Yet in the nearby suburb of Hoeschst, a large chemical plant was untouched. Amid the ruins of Essen, the gigantic Krupp war plants, so vital to Germany, were hardly damaged.

**Plants Survived** — When the Russians marched into Leuna, they found a plant covering nearly 11 million sq ft completely intact and still capable of continued production of synthetic gasoline, rubber and explosives. The French found the giant Mauser armament plant unharmed, it is authoritatively reported.

Particularly invulnerable to air attacks was the steel industry. The Ruhr section alone was the bull's-eye of 271 raids by a total of 97,000 bombers, carrying 287,000 tons of explosives. Result: Five openhearth and bessemer furnaces and nine strip mills were destroyed. Of many blast furnaces in the area, only two of them were put out of operation. IRON AGE's European correspondent reports.

Many other plants were similarly unharmed by mass bombings. Reports indicate Huettnerwerke Haspe plant in West Germany suffered only 9 pct damage. Deutsche Edelstahlwerke, one of Germany's leading steel alloy producers, had only 11 pct of its plant knocked out. Huettnerwerk Geisweid, manufacturers of cast and armor steel, lost 4 pct of its capacity. Hoesch Dortmund, gun makers, suffered damage to 7 pct of its plant; Ruhrstahl Hattingen, 3 pct Gutehoffnungshütte Oberhausen, chain and tank producers, 3 pct, and August Thyssen A. G., 9 pct.

**Production Rose** — Allied destruction of Germany's ball bearing plants created many headlines. But German tank production in 1944 rose 4 pct above the level of the previous year. Aircraft output was upped 6 pct.

In August, 1944, one of the heaviest bombing months of the

## STEEL: Post-Strike Output Rises

As Reported to the American Iron & Steel Institute

	Openhearth		Bessemer		Electric		Total		Calculated Net Tons Weekly	No. Weeks in Month
	Net Tons	Pct Cap.	Net Tons	Pct Cap.	Net Tons	Pct Cap.	Net Tons	Pct Cap.		
<b>1951</b>										
January	7,846,557	101.4	431,725	90.4	570,084	88.6	8,848,466	99.9	1,997,396	4.43
February	6,836,993	99.3	382,112	75.6	507,302	87.5	7,770,407	97.2	1,942,602	4.00
March	8,061,346	104.2	406,926	85.6	606,358	94.5	9,076,630	102.5	2,046,901	4.43
1st Quarter	22,844,996	101.7	1,186,763	84.2	1,683,744	90.4	25,695,503	100.0	1,998,095	12.86
April	7,858,839	104.9	392,472	84.9	584,668	95.7	8,845,979	103.1	2,062,000	4.29
May	8,072,994	104.4	408,650	85.6	618,511	96.4	9,100,155	102.8	2,054,211	4.43
June	7,669,449	102.4	403,001	87.1	589,898	94.9	8,662,348	101.0	2,019,195	4.29
2nd Quarter	23,601,282	103.9	1,204,123	85.9	1,803,077	95.7	26,608,482	102.3	2,045,233	13.01
1st 6 months	46,448,278	102.8	2,370,886	85.0	3,486,821	93.0	52,303,985	101.1	2,021,801	25.87
July	7,708,078	99.8	411,589	86.4	566,818	88.5	8,684,495	98.3	1,964,816	4.42
August	7,894,965	99.5	436,822	91.5	607,308	94.6	8,739,095	99.7	1,972,706	4.43
September	7,653,601	102.4	404,726	87.7	601,830	97.0	8,660,357	101.2	2,023,448	4.28
3rd Quarter	23,054,844	100.5	1,253,147	88.5	1,775,956	93.4	26,083,947	99.4	1,986,592	13.13
9 months	69,501,122	102.0	3,624,833	86.2	5,262,777	93.1	78,387,932	100.5	2,009,947	39.00
October	8,028,721	103.8	458,128	95.9	635,037	98.9	9,121,886	103.0	2,059,116	4.43
November	7,750,845	103.5	411,854	89.1	636,553	102.4	8,799,352	102.6	2,051,131	4.29
December	7,885,830	102.2	396,831	83.3	608,017	94.9	8,890,678	100.6	2,011,468	4.42
4th Quarter	23,665,396	103.1	1,266,813	89.4	1,879,607	98.7	26,811,816	102.1	2,040,481	13.14
1st 6 months	46,720,240	101.8	2,520,060	89.0	3,655,563	96.0	52,895,863	100.7	2,013,546	26.27
Total	93,166,518	102.3	4,890,946	87.0	7,142,384	94.5	105,199,848	100.9	2,017,642	52.14
<b>1952</b>										
January	8,103,123	100.7	407,298	89.3	625,696	89.7	9,136,117	99.3	2,062,329	4.43
February	7,703,066	102.4	382,712	99.8	571,432	87.6	8,657,210	100.7	2,091,114	4.14
March	8,401,140	104.4	378,861	83.1	624,190	89.5	9,404,191	102.2	2,122,842	4.43
1st Quarter	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00
April	7,101,199	91.1	323,006	73.2	566,937	83.9	7,991,142	89.7	1,862,737	4.29
May	7,291,885	90.6	318,642	69.9	594,089	85.2	8,204,596	89.2	1,852,053	4.43
June	1,446,927	18.6	22,862	5.2	189,702	25.1	1,639,491	18.4	382,166	4.29
2nd Quarter	15,839,991	67.0	664,510	49.6	1,330,728	65.0	17,835,229	66.0	1,370,886	13.01
1st 6 months	40,047,320	84.8	1,833,381	68.5	3,152,046	77.0	45,032,747	83.4	1,731,363	26.01
July	1,347,587	16.8	2,000	0.4	277,371	39.8	1,626,958	17.7	388,090	4.42
August <sup>1</sup>	7,599,888	94.4	309,381	67.8	589,438	84.5	8,498,687	92.4	1,918,440	4.43
September <sup>2</sup>	8,011,000	103.0	352,000	79.9	671,000	99.6	9,034,000	101.8	2,111,000	4.28
3rd Quarter	16,958,475	71.1	663,381	49.1	1,537,809	74.4	19,159,645	70.3	1,459,227	13.13
9 months	57,005,795	80.2	2,496,742	62.0	4,689,855	76.1	64,192,392	79.0	1,640,071	39.14

Note—Percentages of capacity operated in 1951 are calculated on weekly capacities of 1,748,337 net tons openhearth, 107,806 net tons bessemer and 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of Jan. 1, 1951 as follows: Openhearth 91,054,020 net tons, bessemer 5,621,000 net tons, electric 7,554,630 net tons, total 104,229,650 net tons. Percentages for 1952 are calculated on weekly capacities of 1,816,637 net tons openhearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings, total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952 as follows: Openhearth 94,973,780 net tons, bessemer 5,381,000 net tons, electric 8,232,890 net tons, total 108,587,670 net tons.

<sup>1</sup> Revised.

<sup>2</sup> Preliminary figures, subject to revision.

war, German steel production hit 2,087 million tons compared with 1,901,260 tons in August, 1939.

It was not until after the fall of 1944 that German war production began to buckle. This was the period when the Allies, after establishing air bases in France, shifted from mass, strategical night bombing of industrial centers to sneak fighter-bomber attacks. In this second phase of the air war, transportation and communication lines were the main targets and destruction from the air was deadly.

**Shift Targets**—With Mustangs, Lightnings, Spitfires, and Tempests hedgehopping from France to destroy railroad stations, highways and canal locks, the massive German war machine creaked to a standstill. Iron, coal, steel and armament output withered when supply lines were smashed. As a result, German war production during the first 2 months of 1945 dropped off almost 55 pct from the previous year.

The surprising ability of German industry to survive repeated mass bombings is largely due to the bomb resistant construction of the plants, which stood up under all but direct hits. In one case a 2000-lb bomb dropped within 100 yd of a blast furnace without damaging it.

Industry must remember, however, that A-bombs would be infinitely more destructive.

## New Auto Plant in Barcelona

The building of the new Sociedad Espanol de Automoviles de Turismo (SEAT) plant in the Free Port Zone of Barcelona is rapidly going ahead. Machinery and machine tools for the factory have arrived.

This new motor car factory is to operate initially as an assembly plant with components imported from FIAT in Italy. Later on it is planned that all components shall be manufactured in Spain. SEAT is confident that the plant will go into production on time in about 12 months.

## Special Problems for Heavy Press

Building heavy presses of unprecedented size to spur rearmament airplane production poses some thorny problems. Shown in the accompanying photograph is the scale model of a 35,000-ton forging press to be used by Air Force contractors to forge single pieces of aircraft structural members.

Size of the 6-ft man standing at floor level indicates the massiveness of the press being made by E. W. Bliss Co., Canton, Ohio. This

firm is also building a 25,000-ton press for the Air Force.

To install the 35,000-ton giant a pit 100-ft deep must be dug for its base. And engineers must make certain the pit's location can support the tremendous weight.

Instead of very heavy castings Bliss is using weldments. There has been trouble in procurement of such heavy plate. Requirements run up to 17-in. thick plate, huge slabs of steel by any yardstick. Welding sections together becomes an around-the-clock operation—once started welding cannot halt until the job is completed. It is estimated this will take 2 months.

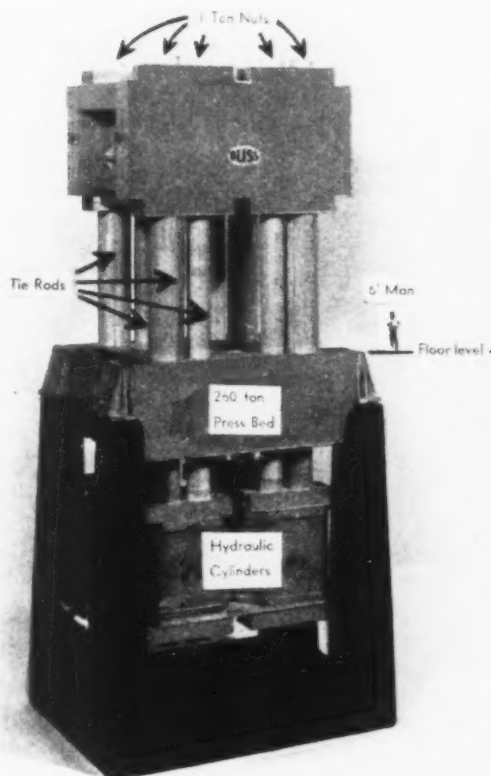
Large size of the sections made it necessary to build a special normalizing furnace in the yard of the Bliss plant. Weight of the sections ranges up to 260 tons.

Transporting such bulk and weight calls for much ingenuity. Bliss will be working on a  $\frac{3}{4}$  in. clearance to move the sections on the Pennsylvania Railroad. The firm has turned over to the railroad designs of special flat cars.

The eight tie rod forgings of the press weigh 74 tons each, are 50 in. in diam and 74 ft long. These tie rods are held in place by eight nuts weighing 1 ton each.

The press will have a 300 in. per min rate of rapid travel while press speed will be from 30 to 150 in. per min.

American press designers gave themselves a workout in planning these heavy presses on drawing boards. A prime consideration always had to be whether a part on the board could be transported on existing facilities once fabrication was completed.



**ICEBERG EFFECT:** Line indicating floor level shows how much of the giant forging press will go underground. Size of 6 ft man indicates towering size.

# WILLIAMS-WHITE PRESS SPEEDS STOVE PRODUCTION



WILLIAMS-WHITE 600-Ton Hydraulic Press forming broiler pan racks for electric ranges. Inexpensive, lightweight and quickly made Masonite dies are used as forming blocks to make possible short runs or quick changes in design.



Whatever your production plans may be, there is a WILLIAMS-WHITE custom designed machine to help you do the job better, faster and more economically. Presses, shears, punches, rolls, benders, hammers or bulldozers . . . designed and built to meet your specifications.



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MOLINE, ILLINOIS

## Research

### JETS: Afterburners For

Planes need added burst of speed . . . Afterburners burn excess oxygen, do the job.

Afterburners give modern jets the quick power they need to zoom off a carrier deck or make a quick getaway from danger. Essentially a ram-jet engine hooked to the tail of a turbojet, an afterburner is a flaming tailpipe which feeds upon the unburned oxygen in the jet stream.

In piston engines air and fuel are mixed in about 16 to 1 ratio and rammed into cylinders. In turbojets the ratio is 60 to 1. Only about a fourth of the air, or oxygen, is burned in the combustion chambers. Rest is used to dilute the mixture and keep temperatures down. This unconsumed oxygen in the jet stream supports combustion of the afterburner.

**Double the Thrust**—From a tube no bigger than an elongated barrel is released enough energy to virtually double the thrust of the most powerful jet engine when more speed is needed. Such a wedding is taking place between jet engines made by General Electric and Westinghouse and afterburners made by Ryan Aeronautical Co.

Since the afterburner consumes fuel like a flaming oil well and has no major moving parts, it sounds extremely simple. In theory, at least, it is. But engineers putting theory into practice have had to cope with a lot of new problems.

One problem was finding a way to ignite fuel in the afterburner (it was like trying to light a bonfire in a hurricane). Igniter plugs were provided.

Intense temperatures are necessary for desired thrust, and huge quantities of fuel are consumed in a short time. With flame temperatures running to 2650°F and melting points of afterburner metals at 2723°F it takes careful design to prevent the burner from smelting itself into a mass of useless fused metal.



## ers For Added Thrust

**Need Scarce Metals**—Hand-in-hand with design problems are metallurgical problems. Afterburners use large quantities of scarce metals—cobalt and nickel-base alloys. Some of these alloys must be formed quite slowly to prevent work-hardening. Some have to be annealed at higher temperatures than stainless steels and require special welding and form-



**INSPECTION:** Ryan supervisors Robert Chase and James Ring (left to right) confer with General Electric inspector James Donovan concerning a fuel-injecting cone for afterburners in the Ryan plant. From this assembly, fuel is injected into the jet stream, aft of the turbine wheel, to burn with the unburned oxygen in the afterburner. Only about one-fourth of the oxygen is burned in the combustion chamber and the rest can be burned in the afterburner for that added thrust.

ing techniques. Properties that make them heat resistant also make them hard to fabricate.

Future refinement may come from introducing the fuel for afterburning ahead of the turbojet turbine wheel instead of behind it. In this method the turbine wheel acts as a flameholder and turbine nozzles function as atomizers, thus breaking up the fuel. If this development proves successful, it might remove the resistance to the jet stream flow which injector and flameholders present. It would also permit a shorter tailpipe which would be well adapted to fast aircraft with swept-back wings.



## STRUCTURAL STEEL

The structural steel experience and facilities of this 56-year old organization are available to you any time anywhere.

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"Steel Permits Streamlining Construction with Safety, Endurance and Economy"



### STRENGTH

The world's most widely used material has the ability to withstand enormous pressures and stresses.



### UNIFORMITY

Precise specifications and constant chemical and physical tests assure unvaried uniformity.



### ADAPTABILITY

Steel frame buildings readily lend themselves to new styles and changing needs which insures long life to structures.



### FIRE SAFETY

Steel will not burn. There are no structures more inherently fire-safe than the modern skyscraper, built with a steel frame.



### VERSATILITY

The great variety of standard shapes and dimensions enables structural steel to be used for any structural problem.



### ERECTION SPEED

Steel frame construction proceeds swiftly because every member is a finished product ready to be placed in the structure.



### SALVAGE

Because steel retains its strength and dependability, it can be economically removed for use in new structures and for scrap.



### ECONOMY

All these factors combine in saving money for the investor and the owner.

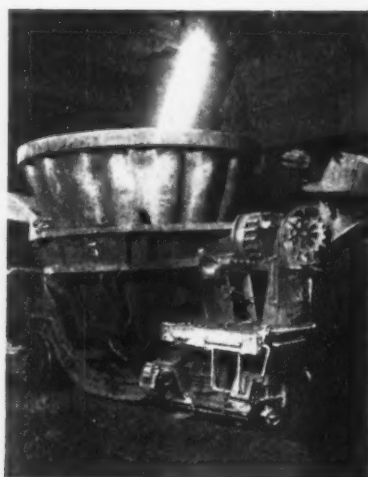
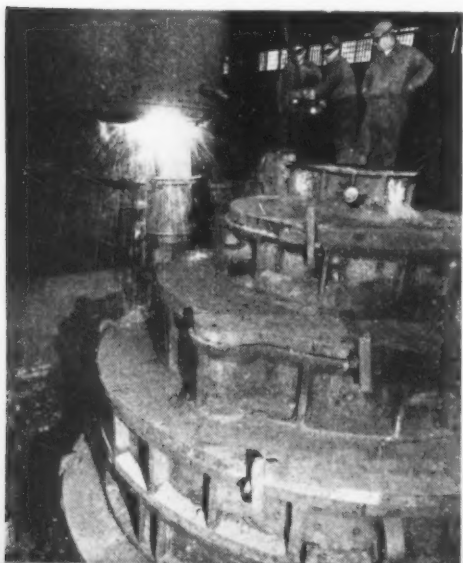
**BRIDGE WORKS**



AIR rammers pack mold sand around the wooden pot pattern to form the core.



SILICA coat is applied after the two halves of the mold have been separated.



BLAST furnace slag at about 2930° F is emptied into finished pot for dumping.

## Rougher Duty for Cinder Pots

Steel furnaces have been operating at above rated capacities as the industry tries to jack up its production. Output has increased, but so has wear on equipment. Particularly hard hit are cinder pots used to dump furnace slag.

High furnace operation causes more metal to remain in the slag which means more metal sticks to the pot bottoms. Extreme force is required to remove this metal which causes cinder pots to wear out prematurely.

To meet this problem, manufacturers of cinder pots, like the Mackintosh-Hemphill Co., Pittsburgh, Pa., are constantly trying to improve their product. The pot casting method used by this firm is typical of the industry.

After a wooden model of a cinder pot has been made, it is set in a casting pit. Mold sand is packed around the pattern. When the model is completely covered, the top half of the sand mold is lifted off, and the pattern is removed from the bottom half.

The two halves of the mold are then coated with a silica wash, oven-dried, and assembled. Molten steel is then poured into an opening in the mold to form the casting. After cooling, the casting is annealed.

MOLTEN steel is then poured from ladle into mold opening to form pot casting.

COPPER coating is sprayed on bottom of cinder pot to minimize metal sticking.



AFTER cooling, the cinder pot casting is cleaned before being annealed.



CINDER pots are annealed to relieve internal stress. Process takes 7 days.



## PRICES: Seek Earnings Standards Rise

**OPS blocks price relief based on pass-throughs . . . But may consider price hikes on basis of earnings standards . . . Surveys requested by small tool and oil country goods manufacturers.**

Companies producing small tools will be surveyed by Office of Price Stabilization as a step toward determining whether the industry is eligible for price relief under earnings standard rules.

Spokesmen for the manufacturers have told OPS there would be little improvement in their profits position if they sought relief solely through pass-through of higher steel, copper, and aluminum costs. Biggest sources of difficulty are labor costs, reported to have increased as much as 15 pct on the basis of new contracts, and steeper freight rates.

On an industry-wide basis, OPS said, the only method of furnishing price relief to manufacturers under present controls policy is by using the earnings standard. Rather than forego the opportunity to gain a measure of relief, company spokesmen asked for an earnings survey.

**As Units**—Oil country machinery and equipment builders are asking Office of Price Stabilization to consider the possibility of having segments of the industry considered as units in an earnings study to determine whether price relief can be obtained.

An industry-wide study, some manufacturers say, would be impractical because of the diversity of production.

Beset by labor costs that amount to 50 pct or more of production costs, the industry urges that action be taken quickly to prevent a serious impairment of its earnings position. Allowable pass-through of higher materials costs give very little help to manufacturers, it is reported.

OPS says there's a possibility that a division of an integrated firm might qualify for individual price relief under General Over-

riding Reg. 29 if that division produces "essential" items. OPS is considering this possibility as an alternative to application of its earnings standard formula.

**Some Hope**—Aluminum castings producers see some hope of partial price relief if the government's standard formula is used and have asked OPS for an immediate earnings study.

Steadily increasing labor costs have beset the industry since the price-freeze date in 1951, spokesmen have pointed out. Labor costs in their field, they said, represent more than 40 pct of the selling price of castings and have increased between 15 and 20 pct in less than 2 years.

Total effect of higher costs of labor and other production elements has been a serious impairment of their earnings status.

**Won't Bother**—Valve manufacturers do not plan to ask OPS for an earnings survey at this time. They feel that application of the earnings standard formula would not be feasible in view of the complexity of industry operations.

This was the conclusion voiced

by spokesmen for manufacturers at a recent meeting with OPS officials. The group told agency representatives that wage increase settlements, plus higher costs of freight and certain materials, had seriously undercut the industry's earnings position.

OPS offered no hope that valve manufacturers would be granted a flat ceiling price adjustment to cover increased labor costs and suggested no approach to price relief except through use of the earnings standard.

**Invitation**—Federal price-setters say that if enough firms in the small pneumatic compressor industry request an earnings survey as a preliminary to price relief, there will be early consideration of the request.

### Industry Controls This Week

**Autos**—Amend. 5, Rev. 1, CPR 1 changes procedure used by auto manufacturers in computing ceiling prices on new products.

**Brass**—Amend., M-82 enables distributors of brass mill products to sell and accept orders for increased amounts.

**Construction**—Dir. 8, Dir. 2, Dir. 5 and Amend. CMP Reg. 6, Amend., Del. 14 and Revoc. M-100 are designed to relax construction regulation and increase amounts of controlled materials that may be self-authorized for construction. Many of the control relaxations will not become effective until May, 1953.

**Reports**—Amend. 36, GCPR concerns reports filed by retailers, wholesalers, suppliers and small manufacturers. It delegates authority to OPS field offices to act on reports filed under Sect. 6 and applications filed under Sect. 7 GCPR.

**Defense Contracts**—Amend. 3, Rev. 1, GOR 2 makes it unnecessary for defense contractors and subcontractors to state their ceiling prices.

**Steel**—Amend. 1, CPR 156 defines more clearly "customary markup" and its use in computing prices of fabricated structural steel, miscellaneous and ornamental iron and vessel shop products for field assembly.





## Defense Contracts

### Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

#### Corps of Engineers, San Francisco.

Brace, cross arm, Stl, galv, 134 ea, 04-203-53-344, Oct. 20.  
Condulet, service head, iron, galv, 134 ea, 04-203-53-344, Oct. 20.  
Floodlight, aluminum, 184 ea, 04-203-53-344, Oct. 20.  
Switch, safety sheet steel, 320 ea, 04-203-53-344, Oct. 20.

#### Signal Corps Supply Agency, Philadelphia.

Handle axle steel, 9900 ea, 579-32D-B, Nov. 7.  
Maintenance kit for carburetor, 4900 ea, 554-32D-B, Nov. 7.  
Cap cover for fuel tank, 2820 ea, 554-32D-B, Nov. 7.  
Carburetor horizontal draft, 8300 ea, 554-32D-B, Nov. 7.  
Lever throttle control, 3470 ea, 554-32D-B, Nov. 7.  
Adapter carburetor, 2980 ea, 554-32D-B, Nov. 7.  
Governor, 3870 ea, 554-32D-B, Nov. 7.  
Stator magneto flywheel type, 3660 ea, 55-32A-B, Nov. 7.  
Transformer power p/o Sig, 3630 ea, 511-32C-B, Nov. 7.  
Transformer, 1500 ea, 511-32C-B, Nov. 7.  
Bushings brass 7 neoprene, 21400 ea, 787-32D-B, Nov. 5.  
Stamp mechanism time date and time indicator, 370 ea, 557-32A-B, Nov. 6.  
Cable grip kits, 265 ea, 685-32D-B, Nov. 6.  
Valve exhaust, 13000 ea, 571-32D-B, Nov. 6.  
Cap for connector, 3300 ea, 548-32B-B, Nov. 6.  
Jack assy, 5200 ea, 548-32B-B, Nov. 6.  
Receptacle assy, 2123 ea, 584-32B-B, Nov. 6.  
Spring, flat type, 45800 ea, 10017-32DQ, Nov. 7.

#### Navy Purchasing Office, Washington.

Calipers, 5014, 513Q, Oct. 23.  
Ammunition component box mark 2, steel, 249996, 5735-O-B, Oct. 30.  
Guns, spray, 4435, 6751-B, Oct. 24.  
Reamers, 44300, 6752-B, Oct. 24.  
Wrench sets, 54990 set, 6743-B, Oct. 30.  
Nippers, 322425, 6745-B, Oct. 30.

#### Bureau of Ships, Washington.

Marine tank gage, 100, 548-622Q, Oct. 31.

#### Watervliet Arsenal, Watervliet, New York.

Steel housing assy, 81MM mount mortar, 2600 ea, 53-33B, Nov. 3.

Screw elevating assy, 81 MM mount mortar, 3900 ea, 53-33B, Nov. 3.  
Handwheel traversing assy, 81MM mount mortar, 4400 ea, 53-33B, Nov. 3.  
Yoke assy, parts for 81MM mount mortar, 2300 ea, 53-33B, Nov. 3.  
Leg assy, 81MM mount mortar, 2500 ea, 53-33B, Nov. 3.  
Steel plug, 81MM mount mortar, 5004 ea, 53-33B, Nov. 3.  
Steel guide, 81MM mount mortar, 5004 ea, 53-33B, Nov. 3.  
Steel nut, 81MM mount mortar, per drawings and specifications, 3900 ea, 53-33B, Nov. 3.  
Aluminum bronze screw, 81MM mount mortar, 10000 ea, 53-33B, Nov. 3.

#### Quartermaster Depot, Philadelphia.

Fastener slide interlocking, 14473, 73B, Oct. 30.  
Fastener slide, 1000000 ea, 68B, Oct. 10.

#### General Stores Supply Office, Philadelphia.

Hinges, spring, screen door, wrought brass, 7600 pr, 1-1172B, Oct. 21.

#### Rock Island Arsenal, Rock Island, Ill.

Sleeve, cable, 314000 ea, 11-070-53-156B, Oct. 23.  
Holder lathe tool, 4065 ea, 11-070-53-161B, Oct. 23.  
Handle baseplate assy, 4000 ea, 11-979-53-164B, Oct. 29.  
Tools, 900 sets, 11-979-53-167B, Oct. 24.  
Sander electric portable, 2800 ea, 11-979-53-170B, Oct. 24.  
Wrench electric reversible, 2740 ea, 11-979-53-179B, Oct. 24.

#### Springfield Armory, Springfield, Mass.

Mill cutters and saws, 348, 53-80B, Oct. 29.  
"5" cutters, 349 ea, 53-80B, Oct. 29.  
Taps, 680 ea, 53-80B, Oct. 29.

### Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Hoist assy, 30 ea, \$126,006, Red Lion Cabinet Co., Red Lion, Pa.  
Relay, 12248 ea, \$61,485, Imco Mfg. Corp., New York.  
Starter assy, 640 ea, \$149,862, Bendix Aviation Corp., Teterboro, N. J.  
Direct current relay, var, \$26,586, Herback & Hademan, Inc., Philadelphia.  
Generators, 130 ea, \$198,161, Bendix Aviation Corp., Teterboro, N. J.  
Maintenance parts for R5C spares, var, \$30,164, North American Aviation, Inc., Columbus, C. E. Bloomer.  
Kit-modification, 220, \$75,680, General Electric Co., Philadelphia.

Maintenance parts, var, \$43,226, General Metals Corp., Burbank, Calif.

Maintenance parts, var, \$37,040, Bendix Aviation Corp., Teterboro, N. J.

Maintenance parts, var, \$31,039, B. F. Goodrich Co., Akron.

Coils, 1050 ea, \$28,512, General Electric Co., New York.

Circuit breakers, 2200 ea, \$65,032, General Electric Co., New York.

Rack, arm, M4 for Cal. .30 carbine, 17300 ea, \$245,141, Dakin Mfg. Co., Chicago.

Stabilizer grenade rifle M23A1, MPTS, 7360, \$304,483, Slaymaker Lock Co., Lancaster, Pa.

Trailer, 560 ea, \$216,563, Strick Co., Philadelphia.

Switch for F6F-5K aircraft, 390 ea, \$44,070, Kollsman Instrument Corp., Elmhurst, N. Y.

Maintenance parts for PB4Y, var, \$53,633, Consolidated Vultee Aircraft Corp., San Diego, Calif., H. N. May.

Connectors, wire, rope, 6000 ea, \$38,100, Maine Specialty Co., Portland, Me.

Accumulators & regulators, var, \$59,188, Bendix Aviation Corp., N. Hollywood, Calif., David Schlosser.

Maintenance parts for var aircraft, var, \$50,672, General Electric Co., New York.

Power panel, 124 ea, \$25,763, Federal Electric Prods. Co., Long Island City, N.Y.

Generators, var, \$108,904, General Electric Co., Philadelphia.

Relay, 964 ea, \$49,019, Electro-Switch & Controls, Inc., Culver City, Calif.

Valve, var, \$68,483, Weston Hydraulics Ltd., N. Hollywood, Calif.

Switch, var, \$26,028, PM Industries, Inc., Stamford, Conn.

Parts for aviation armament, 588 ea, \$141,414, E. L. Courmand & Co., Inc., New York.

### Construction

#### Steel Inquiries and Awards

Fabricated steel awards this week include the following:

- 4250 Tons, Amesbury and Newburyport, Mass., superstructure of continuous, multi-span, steel-truss bridge. Harris Structural Steel Co., New York, low bidder.
- 360 Tons, Hayesville, Kansas, Rock Island Railroad bridge to American Bridge.
- 225 Tons, White, Wis., Oglesbay Norton & Co. mine shaft sets to Worden-Alten Co.
- 200 Tons, Chicago, Greyhound Corp. garage to Joseph T. Ryerson & Son.
- 185 Tons, Minneapolis, bridge U-9-0 Great Northern Railroad, to American Bridge.
- 145 Tons, Pierre, S. D., Bureau of Reclamation, Steel Towers Spec. ES-3794 to West Coast Steel Co.

Fabricated steel inquiries this week include the following:

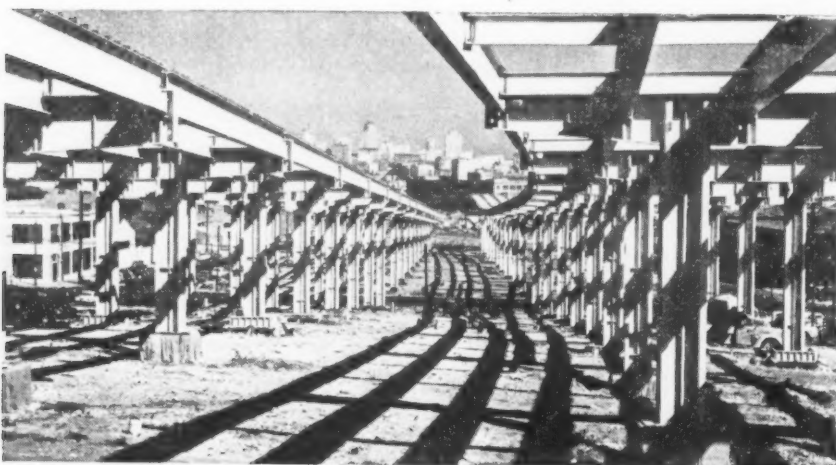
- 465 Tons, St. Johnsbury, Vt., WF beam bridge with approaches, grading, drainage. P. M. Stevens, St. Johnsbury, Vt., district engineer. Completion date July 1, 1954.

Reinforcing bar awards this week include the following:

- 900 Tons, Indianapolis, sewage treatment plant to H. D. Tousley.
- 155 Tons, Chicago, Neal junior high school, to Powers Construction Co.

Reinforcing bar inquiries this week include the following:

- 360 Tons, Amesbury and Newburyport, Mass., superstructure of continuous, multi-span, steel-truss bridge. Harris Structural Steel Co., New York, low bidder.
- 100 Tons, St. Johnsbury, Vt., WF beam bridge, with approaches grading, drainage. P. M. Stevens, St. Johnsbury, Vt., district engineer. Completion date July 1, 1954.



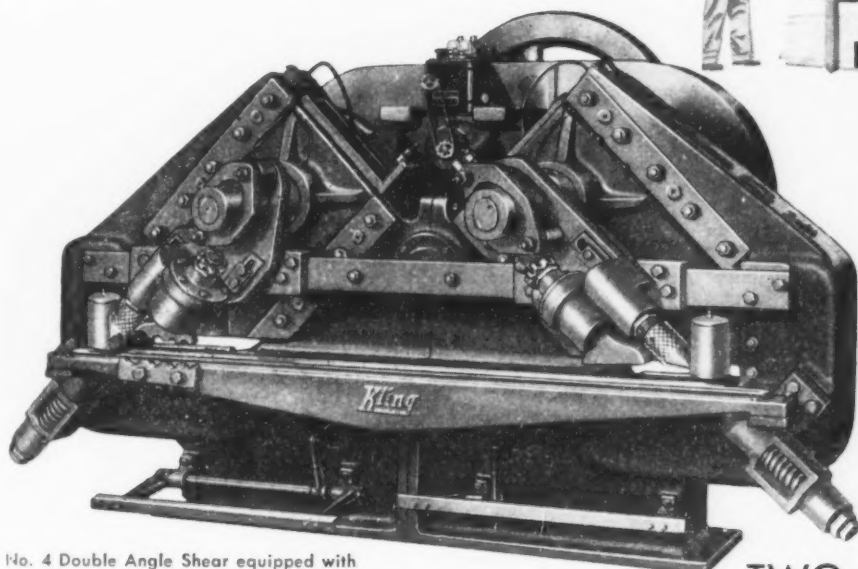
ARTISTIC LAYOUT: This striking view of a new overpass project, part of the San Francisco Bayshore Freeway, shows that steelwork is now 52 pct completed. About 4800 tons of structural steel, fabricated at Bethlehem's Pacific Works, will be used in the project. Design attempts to reduce number of column to minimum while making the supporting bents as attractive as possible.

# It's the **BUSIEST** machine in the shop!

... gives more cuts per day on **FLATS**

**ANGLES**

**ROUNDS**



No. 4 Double Angle Shear equipped with Automatic Lubrication System, Gear Guards and Automatic Hold-downs.

**Kling**

**double  
angle  
shears**

TWO shears in ONE machine!

If you're using obsolete, slow-poke methods of shearing, the Kling Double Angle Shear can help you save time and money. This modern compact machine is designed for high speed, high production shearing on both long and short run jobs. Many metal fabricating plants and steel warehouses have found the Kling Shear to be the workhorse of the shop. For instance, one machine will shear round bars and bar angles on the left side while the right side can be used for structural angles and flat bars. The machine is built with the speed and power to handle the bulk of your shearing requirements. For shops with considerable mitre shearing

work, Kling Double Angle Shears can be mounted on a turntable to facilitate handling. Automatic hold downs and one-shot lubrication can be furnished when desired. Sizes to handle angles up to 8" x 8" x 1½".

#### WANT TO CUT SHEARING COSTS?

Find out how this high-production machine, available in four sizes, can give you more cuts, cleaner cuts on your shearing operations. Write for more information and latest bulletin. Kling Bros. Engineering Works, 1322 North Kostner Avenue, Chicago 51, Illinois.

SEND FOR NEW BULLETIN 2345.

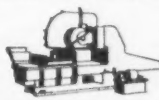
in our  
60th  
Year

**Kling**

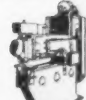
...an investment in speed!



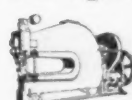
Combination Shear  
Punch & Copers



Friction Saws



Rotary Shears



Punches

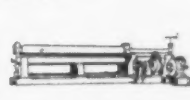
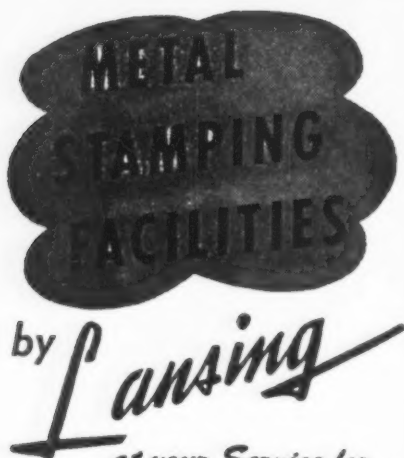


Plate Bending Rolls

October 16, 1952



*at your Service for...*

**TRANSPORTATION**

**EQUIPMENT**

**HOUSEHOLD**

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**ELECTRICAL**

**EQUIPMENT**

**INDUSTRIAL**

**EQUIPMENT**

**FARM**

**IMPLEMENTS**

*Lansing Stamping Co.*

ESTABLISHED 1914

LANSING 2

MICHIGAN

***Are you selling  
used machinery,  
tools, equipment  
or surplus  
materials?***

**Let an advertisement in The Iron Age help speed up the process by contacting the many buyers who look here for leads.**

## Industrial Briefs

**Absorption**—CARL HIRSCHMANN CO., Manhasset, N. Y., has completely absorbed Hauser Machine Tool Corp., also of Manhasset.

**Larger Plant**—HUEBEL MFG. CO., INC., has moved to a larger plant at 763 Lexington Ave., Kenilworth, N. J.

**Expansion**—A \$440,000 expansion of testing facilities has been scheduled for 1953 by the Army Ordnance Corps' Malta missile test station, operated by GENERAL ELECTRIC CO.

**Plating Survey**—NATIONAL ASSN. OF METAL FINISHERS, Washington, has mailed out questionnaires to over 3500 companies. Having received answers from 9.2 pct of those queried, the association asks that plants still holding questionnaires hasten to get them in.

**Docks Dedicated**—The new \$6 million Savannah State Docks of the GEORGIA PORTS AUTHORITY will be officially dedicated in ceremonies there on Nov. 11.

**Warehouse Opened**—UDYLITE CORP. has opened a new warehouse in Philadelphia.

**Appointment**—Korhumel Steel & Aluminum Co., Indianapolis, has been appointed distributor of tools manufactured by THE PARKER APPLIANCE CO., Cleveland.

**Invention Award Plan**—Competition plus an invention award plan have boosted output of ideas for new inventions 80 pct among engineers and scientists of WESTINGHOUSE ELECTRIC CORP., Pittsburgh.

**Company Organized**—Gordon D. Zuck, president, has announced the organization of VULCAN STEEL CONTAINER CO., Birmingham, Ala.

**Officers Elected**—STEEL PRODUCTS WAREHOUSE ASSN. has elected the following officers for 1952-1953: President, Sy Goldberg; vice-president, Moe Weiner; and secretary-treasurer, Stuart Henderson.

**Directors Chosen**—The following officers have been chosen by PRESSED METAL INSTITUTE: Wallace F. Ardussi, president; Samuel P. Hull, vice-president; and Hunter Morrison, Jr., secretary-treasurer.

**Salvage Method**—Two research projects aimed at finding an economical method of salvaging tin and steel scrap from tin cans will be sponsored by STEEL INDUSTRY SCRAP MOBILIZATION COMMITTEE. One project will explore pyrometallurgical methods and another at Armour Research Foundation will work on chemical methods of recovery.

**Opening**—The new plant of ELECTROLIZING CO., has opened at 1406 E. 15th St., Los Angeles.

**Atomic Laboratories**—WALTER KIDDE NUCLEAR LABORATORIES has announced the establishment of new research facilities at 975 Stewart Ave., outside of Garden City, L. I.

**New Warehouse**—Increasing demand for brass and copper mill products in the middle Atlantic area, has caused the opening of a new warehouse in Philadelphia for BRIDGEPORT BRASS CO.

**Establishment**—AMERICAN BEARING CO. has been established in Minneapolis by S. H. Friedman, formerly of Chicago.

**Company Acquired**—In order to diversify its manufacturing operations, H. K. PORTER CO., INC., Pittsburgh, has acquired Watson-Stillman Co., Roselle, N. J.

**Machine Tool Service**—A new demonstration center and machine tool service has been opened at 21 Prospect St., Newark, by KURT ORBAN CO., INC.

**Alloys Available**—High-nickel alloys, rolled to precision-tolerances and ultra-thin gages are now available from AMERICAN SILVER CO., INC., Industrial Div., Flushing, N. Y.

**Formed**—A new company, ECLIPSE FUEL ENGINEERING CO., of Canada, Ltd., has been formed to handle sales and service of "Eclipse" products in Canada. The new offices are at 705 Bloor St., West, in Toronto, Canada.

**Opens Office**—NORTH AMERICAN STEEL PRODUCTS CORP. has opened a New York office at 32 Broadway with Paul Katz as district manager.



# When a high-strength steel is needed

for severe cold-formed shapes like these bumpers

Specify →



and get all of the  
requirements  
of SAE 950



When a material meeting the requirements of the high-strength, corrosion-resisting steels of SAE Specification 950 is used for severe cold-formed shapes, it will pay to investigate N-A-X HIGH-TENSILE steel—the low alloy steel with built-in formability. Its finer grain and higher hardness also result in brighter luster when ground and polished for plated parts.

**GREAT LAKES STEEL CORPORATION**  
N-A-X Alloy Division

**NATIONAL STEEL CORPORATION**  
Ecorse, Detroit 29, Mich.



# The Automotive Assembly Line

## Assembly Lines Run At Full Speed

**Car, truck output reminiscent of free market boom days . . . Expect half million cars this month . . . Will be highest yet since May '51 . . . New models now ready—By R. D. Raddant.**

Production lines in Detroit are moving at a rate that has automotive statisticians thumbing back through 1951 and 1950 record books to find comparable figures.

Soaring weekly totals of new cars and trucks running off assembly lines and onto haulways are

only by the record final 3 months of 1950 when 1,668,219 cars were built.

**Cash Value**—The figures themselves don't mean much unless translated into economics. The production surge means that the clos-

Production rates are even more remarkable in that they are being reached while model changeovers are in progress. Chrysler is now changing at all four divisions which virtually put a stop to output there.

**Changeover Cuts**—For example, Dodge output a week ago was just over 1000 against an average weekly output of more than 6000. De Soto was down to a token 150 for the week as was Chrysler. In spite of changing over, Plymouth kept production at a respectable 8000, avoiding the usual shutdown. Again these figures are from Ward's compilers.

Of the Big Three, Chrysler cars will be the first to show 1953 lines, all of which are now in production and have been seen at private showings or by enterprising "spies" who have penetrated security curtains.

A sidelight of the production picture is the race between Ford and Chrysler for second place in the industry. Bitter battle between the two at National Production Authority hearings showed the prestige each attached to position.

Ford was destined for third under the quota system until the steel strike placed the issue back on a production basis rather than an allotment basis.

At the three quarter mark, Ford had a total of 668,178 against 654,778 for Chrysler. It is now doubtful if Chrysler can climb back into second spot unless Ford changeovers cut output more than is seen.

**Big Question**—About the only blank space remaining in the 1953 automotive picture is the place where the figures will be written in on price tags.

Most of the picture—styling, power and engineering changes—has been pretty well filled in by this time. Security-minded automotive people are exceeding their usual reticence when price comes into the discussion.

One executive who is known for his frankness resorted to this dodge

**Automotive Production**  
(9 month totals)



reminiscent of the boom days of the free market rather than the controlled production of 1952.

*Ward's Automotive Reports*, the statistical bible of the industry, says that producers are "betting overtime" that 500,000 passenger cars will leave U. S. auto plants in October. If the half million mark is reached, it will be the first month it has happened since May, 1951, when 506,545 cars were built.

Taking it a step further, the industry may turn out about 1.3-million cars in the final quarter. If it does, it will be the second highest last quarter in history, surpassed

ing months of the year will bolster the sagging earnings of the industry, both to the stockholders and to labor.

But with 400,000 units lost to the industry during the steel strike there is little chance that corporate profits will bring much cheer to stockholders, even before taxes. Early in the year production controls idled many thousands of automotive workers. The steel strike kicked them when they were down. At least they are now assured overtime—fattened paychecks through the end of the year and probably well into 1953.



"Our railroad bridge is an

## EYE OPENER

for anybody with an assembly problem"

"Whether you're assembling toasters or bridges," Ken went on, "it pays to set your sights on fasteners."

"Fasteners?" asked Jack.

"Right!" affirmed Ken. "We've saved plenty by taking the RB&W man's advice to switch from rivets to high strength RB&W bolts in assembling high stressed structural joints."

"These bolts stay tight and that saves us maintenance. They assemble faster, and that saves us labor and construction time."

There's a cost-cutting lesson for you in this story, whatever your industry.\* So look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New inventions, like RB&W's SPIN-LOCK Screw, may prove more efficient

than the fasteners you're now using.\*\* Or you may save by the stepped-up production you get from using the finest fasteners...RB&W bolts, nuts, rivets and screws of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W at Port Chester.

RB&W—The Complete Quality Line. Plants at: Port Chester, N.Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents: Portland, Seattle. Distributors from coast to coast.

**RUSSELL, BURDSALL & WARD  
BOLT & NUT COMPANY**

**RB & W**

107 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

\*If you're interested in construction, write RB&W at Port Chester for the free article, "No More Riveting."

\*\*New SPIN-LOCK Catalog is in the Product Design File. Write for extra copies.



# a **NEW** use for **T and W** stampings

Progressive engineers  
and designers of new  
products recognize  
T & W's ability to  
produce stampings for  
light weight, strength  
and economy.



32" x 9"

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WILLIAMS**  
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2





when pressed for price trends at a recent press conference.

"I can say that prices will be approximately the same," he said. And he refused to elaborate.

**Cost More**—Actually, there is little doubt that the 1953's will cost the buyer more. It is where the boost will be applied that is the question. List price is really a relative figure, principally because the average buyer is dependent on a trade-in allowance.

For example, list price may remain the same, but the dealer may give him less this year than he would for a comparable car a year ago.

In spite of increasing costs in both labor and materials that hit the auto industry in recent months, manufacturers are not anxious to boost prices more than is absolutely necessary. They had a taste of buyers' resistance only last spring.

Best guesses indicate that prices will go up from 5 to 7 pct on models that show radical changes; less on others.

## Kaiser First With New Models

First of the auto producers to introduce its new models is Kaiser-Frazer.

The Kaiser Deluxe and Manhattan models show little departure from the present lines. Chrome moldings give better emphasis to the sweeping front-to-rear lines. Horsepower has been stepped up from 115 to 120 in the 6-cylinder Kaiser engine.

The Henry J series is slightly longer than its 1952 predecessor. Engine performance is improved by greater capacity in the oil flow.

## Third Axle Boosts Truck Payload

Whenever a truck company comes out with something new these days, chances are the motivating factor is an increase in payload.

This is apparent in the third axle introduced by White Motor Co. for its trailer trucks. The third axle is called a "steering pusher" that steers in coordination with the tractor's front wheel.

## Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS	TOTAL
Oct. 11, 1952	108,555*	32,332*	140,887*
Oct. 4, 1952	111,169	31,600	142,769
Oct. 13, 1951	95,119	25,424	100,543
Oct. 6, 1951	88,485	24,383	112,868

\*Estimated

Source: Ward's Reports

## SPORTS CARS:

**Industry watches public reaction to Buick Skylark model closely.**

Announcement that Buick will produce its highly publicized Skylark sports car in 1953 was somewhat less than a surprise in the automotive world. It was a foregone conclusion for several months.

Public reaction will be watched keenly by almost all competitors. After all, most of them are probing the potential market with sports car models of their own.

While the Skylark is definitely a

sports car, it has production features that make manufacture an easier problem than for most comparable cars. It is built on a standard Roadmaster convertible chassis. Price will be "less than \$6000," according to Ivan L. Wiles, Buick general manager.

At the same time, Chrysler stepped in as a potential sports car producer by showing a new "Special" at the Paris Automobile Show. Unlike the Skylark, the Chrysler is built by Ghia in Turin, Italy, and does not appear to be a production car at the moment.

## THE BULL OF THE WOODS

By J. R. Williams



# Latrobe to Display Mammoth Bar of High Speed Steel

*New Development to be Featured at A. S. M. Show*

Latrobe Steel Company, well known producers of quality tool steels, will exhibit at the Philadelphia A. S. M. Exposition (October 20-24) a bar of "DESEGATIZED" high speed steel — 10 inches in diameter and 10 feet long, weighing approximately 3,000 pounds.

This is the largest bar of high speed steel ever made and is free of carbide segregation throughout.

Carbide segregation and its harmful effects have long been a problem in the manufacture and heat treatment of high alloy tool steels. Latrobe Steel Company, who introduced "DESEGATIZED" high speed steels and high carbon-high chromium die steels in 1946, states that it is now possible to manufacture sizes free of carbide segregation to meet any current and foreseeable needs for these steels.

in the main office outside the enclosed telephone de

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# Latrobe

## STEEL COMPANY

LATROBE, PENNSYLVANIA

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## This Week in Washington

### Navy May Seek Big New Carrier Project

Next Congress may get Navy request for building carriers . . .  
Jets need more deck room . . . How much steel will be needed  
. . . FTC will survey how nation spends money—By G. H. Baker.

Look for the Navy Dept. to ask Congress early next year for authority to embark upon a huge new carrier construction program.

Need for such a program, Navy will explain, is based on the increasing use of larger and heavier carriers. Jet aircraft, in particular, require larger carriers not only for launching and landing, but also for servicing and other non-flying purposes.

**Seven Good Reasons**—Such a construction program will, of course, require large quantities of steel. Some idea of the big jump in steel requirements can be gained from this comparison. Smaller World War II carriers required only 15,620 tons of steel apiece. Larger ones will need much more.

There are a number of sound reasons for moving into a big-carrier construction program. As Navy officials see it, there are at least seven:

- (1) Increased weight of aircraft.
- (2) Need for increased fuel capacity, due to jets.
- (3) Need for more catapults.
- (4) Need for more aviation ordnance space.
- (5) Increased over-all dimensions of modern aircraft.
- (6) Increase in aircraft landing speeds.
- (7) Need for better protection against torpedoes, bombs, and "other" weapons.

**No Unification?**—Congressional indignation is mounting over the failure of the Army, Navy, and Air Force to promote a higher degree of service unification. Feeling at

the Capitol is that Pentagon brass "talks" unification, but does little or nothing to drive it into effect.

One legislation proposal now being readied for presentation to the Senate and House for action early next year would spell the end of the Joint Chiefs of Staff power to determine broad military policies. Under the present set-up, it is argued, Army-Navy-Air Force brass has absolutely no incentive to end the wasteful duplication of functions among services.

**Civilian Control**—New proposal calls for the deciding of all policy matters by civilian officials. This would have the effect of banishing the Joint Chiefs of Staff from policy-making power. Their role in future policy matters would be purely advisory under the plan.

A House subcommittee headed by Rep. Herbert C. Bonner, D., N. C., points out that the present "2-hat" composition of the Joint Chiefs of Staff permits the military to act in the dual roles of "partisan" and "judge." Such a system only adds to the high cost

of defense because of the constant jockeying for position among the competing military services.

**How's Money Spent**—New study of the nation's spending habits, affecting both business and the public alike, is getting under way at the Federal Trade Commission. The agency will seek to determine how the consumer's dollar is spent, and whether or not "overhead" is unnecessarily inflating prices.

Of each product sold in regular channels of distribution, what percentage of the dollar paid out goes for materials? For labor? For distribution? Profits? The answers, FTC predicts, will be useful in holding down prices.

**Value to Many**—The resulting data also will be useful to business firms, to trade associations, credit institutions, and to private investors. Individual companies, for example, could compare their costs with those of their industry as a whole, and thus derive some idea as to their relative efficiency. Furthermore, there is considerable demand for such data from labor-management groups, by the government, by farmers, and by consumers.

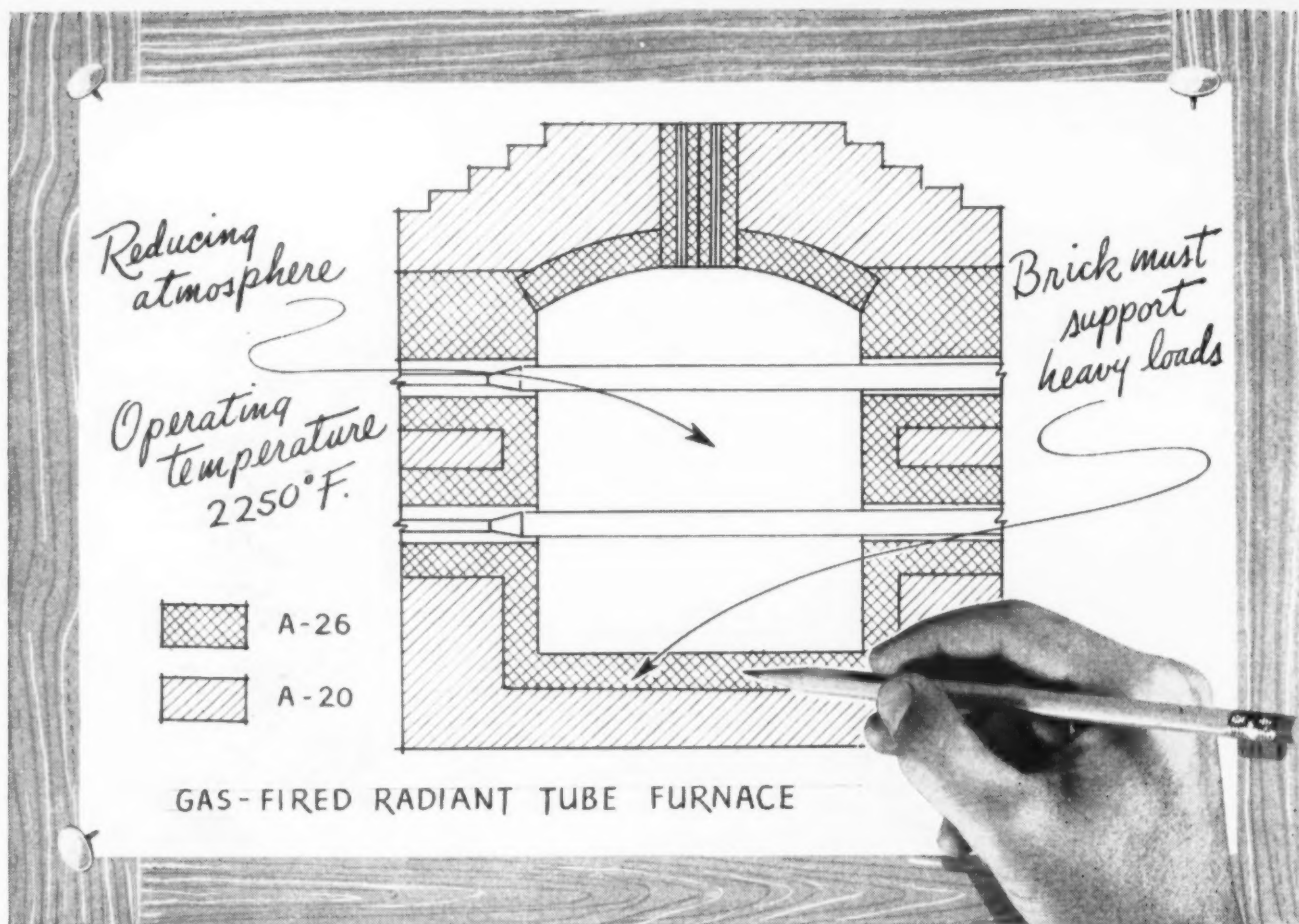
**Trend of Draft**—The 47,000-man draft call that will confront industry's personnel chiefs in December is to be confined largely to 20 and 21-year-olds. Draft officials are prohibited from calling up 19-year-olds at present.

All of the 47,000 men are to be tagged for service in the Army.

**Xmas Leave**—New angle to be introduced into the December draft call requires local selective service boards to deliver the entire month's quota in the first 2 weeks of the month. This will permit the maximum number of personnel to go on Christmas leave. It will mean that the draftees as well as selective service officials will be able to "go home" for Christmas.







## Which insulating fire brick would you use?

No single type of fire brick will satisfy all the requirements of every furnace. It usually takes a *combination* of brick types to insulate most effectively.

In this radiant tube furnace, for example, different type brick were used for lining and back-up insulation. The lining called for a brick that could withstand the reducing atmospheres as well as the constant "soaking heat" caused by thick furnace walls. With heavy floor loads, hot compression strength was important.

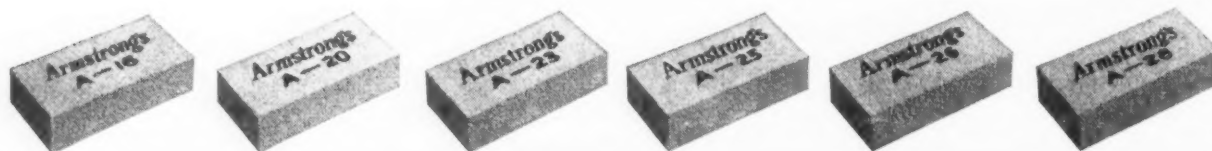
To meet all these demands, Armstrong's A-26 Fire Brick was used in the lining. This brick offers high resistance to reducing atmospheres and has the great compression strength needed. In addition, A-26's top temperature limit of 2600°F. allows a good margin of safety in this application.

For back-up insulation, five 2½"-thick courses of Armstrong's A-20 Fire Brick were used. A-20's high

insulating efficiency helps reduce heat loss, cuts fuel costs, and makes for more even temperatures.

All six refractory types in the Armstrong Line are formulated to give you the proper balance of physical properties. All of these brick are strong yet light in weight, will stand up under mechanical abuse and severe thermal shock.

You'll find it pays to call on Armstrong whenever you're faced with a refractories problem. An experienced Armstrong engineer will be glad to advise you in choosing the best brick—or combination of brick—for your particular job. Chances are he can save you money and improve unit performance as well. Before you go ahead with your next furnace job, call your near-by Armstrong office or write Armstrong Cork Company, 4910 Mulberry Street, Lancaster, Pennsylvania.



### ARMSTRONG'S INSULATING REFRACTORIES

## NICKEL: Expect Good Nicaro Report

**Early report from GSA will show Nicaro paying off better than during war . . . 12 furnaces now in full operation . . .**

**Research on cobalt, better nickel recovery—By A. K. Rannells**

General Services Administration will shortly release a report showing that the multi-million dollar investment in the Nicaro nickel project is paying off better today than during the war.

"On the basis of preliminary figures," GSA administrator Jess Larson told THE IRON AGE, "we are nearing our originally estimated output rate of 15,000 tons.

"With Nicaro's 12 furnaces now in full operation, the free world is guaranteed nickel supplies at a rate at least 10 pct larger than pre-Korea."

Until complete data is received this month, there is no basis for comparison with wartime operations. But there is no doubt, Mr. Larson says, that the restored plant is at least 8 pct higher in efficiency than during its best wartime period.

Reactivation of the plant, closed down early in 1947, began in January, 1951, when GSA contracted with the Frederick A. Snare Corp., builder of the original works, to restore the facilities to operating condition.

**Cost Breakdown**—Cost of the rehabilitation after being inactive more than 4 years amounted to slightly more than \$12 million. Thus the plant now represents a total investment (including original cost of \$32 million) of nearly \$45 million.

Reconstruction cost is split almost evenly between rehabilitation and modernization and improvement.

A breakdown of the bills shows that out of the total reactivation cost about \$5.7 million went into restoration and repair, \$2.9 million into improved and more modern equipment, and \$1.7 million into new construction.

Overall cost of labor amounted to \$1.7 million, of which 2 pct is charged to overtime in hurrying up the job.

**Research Work, Too**—Included in the improvements is \$600,000 for construction of a pilot plant for recovery of cobalt. This plant will also test out the Karon process which, if it proves out, is expected to add to the recovery of nickel by 10 pct.

Work was completed and the plant went into full operation in mid-July. However, GSA says, this does not mean that it has been turning out nickel at full capacity. There have been many "bugs" resulting from long inactivity of machinery, training of workers and change over to new equipment.

But the coming report is expected to show that these have been worked out and that production from here on will be at the previously estimated rate—and perhaps more.

It had originally been intended to place operation of the reactivated plant back into the hands

of the Dutch-owned Mining Equipment Corp. of New York, the wartime operator.

However, the Dutch are now out of the picture. The plant is operated by the Nickel Processing Corp., owned jointly by National Lead Co. (60 pct) and Fomento Minerals Cubanos (Cuban capital), which bought out the interests formerly held by the N. V. Billiton firm in Holland.

**U. S. Gets Output**—All output by Nicaro is to go to the United States. Operation is on a fee basis which is expected to produce nickel oxide at about 40¢ per lb of contained nickel.

Rated capacity in 1942 was about 43 million lb of highgrade nickel oxide which would work out at about 32 million lb of contained nickel.

As stated, present operations indicate a production rate now of approximately 30 million lb. With operations going smoothly, and in view of improvements in equipment and efficiency, GSA confidently expects this to be increased considerably by end of the year.

### Guided Missile Anti-Aircraft

Anti-aircraft units using the NIKE guided missile as primary armament probably will be organized and placed in positions of defense beginning next year, the Army has announced.

Tests on the NIKE have proved sufficiently successful to warrant conversion of conventional-type anti-aircraft battalions to the missile-firing type.

Personnel who will form cadres for the new battalions are undergoing tactical and technical training at the Guided Missile Center, Ft. Bliss, Tex., and White Sands Proving Ground, Las Cruces, N. M.

### NPA Merges Two Divisions

Under the changing set-up at National Production Authority, the Tin, Lead, and Zinc division has been merged with the Miscellaneous Metals & Minerals division, headed by Erwin Vogelsang.



"It's O.K., Mr. Truman, just a private fight."

# aetna-standard completes two-year expansion program



The two-year expansion program gives Aetna-Standard additional facilities to meet delivery schedules for tube mills, flat-rolled equipment, wire-drawing products, drawbenches and other machinery for the metal industry.

At the big Ellwood City plant . . . a new Roll Foundry features foundry handling equipment and many innovations. Additional assembly and machine shop capacity has been added, augmented by many new machine tools. Executive offices are now located in the Frick Building, Pittsburgh, Pa. . . . General Offices in Ellwood City.

Aetna-Standard recently completed 50 years of Creative Engineering service to the ferrous and non-ferrous industries and looks forward with confidence to another fifty.



**BUYS RUBBER & PLASTICS  
MACHINERY DIVISION OF**  
*National Erie*

The facilities of the Warren, Ohio, plant will be used primarily for the production of machinery for the rubber industry. Aetna-Standard has purchased the patterns, drawings and some machinery of the rubber and plastic products division of the National-Erie Corporation, Erie, Pa., subsidiary of Bucyrus-Erie Company.

## Aetna-Standard

THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

Plants in Warren, Ohio • Ellwood City, Pennsylvania

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Head Wrightson Machine Company, Ltd., Middlesbrough, England — Great Britain, Finland, Sweden, Norway, Denmark, Union of South Africa, Northern and Southern Rhodesia.

Aetna-Standard Engineering Company, Ltd., Toronto, Ontario, Canada.

M. Castellvi, Inc., New York, N. Y. — Mexico, Central and South America.

Societe de Constructions de Montbard, Paris, France — France, Belgium, Holland, Luxembourg, Switzerland.

Demag Aktiengesellschaft, Duisburg, Germany — Germany, Austria, Yugoslavia, Greece, Turkey, Egypt.

Compagnia Italiana Forme Acciaio, Milano, Italy — Italy.

Aetna-Japan Company, Ltd., Tokyo, Japan — Japan.

Hale & Kullgren, Inc., Akron, Ohio — Representative for the Rubber Industry.

Designers and Builders to the Ferrous, Non-Ferrous, Leather and Rubber Industries



## West Coast Report

### Defense Expansion Steel Easing?

**Supply should catch up with western demand in first period 1953 . . . NPA certificates for area hit new low . . . Mills see a peak early in year, then easing market—By T. M. Rohan.**

Steel supply for expansion of defense-connected projects in the West will probably catch up with demand in the first quarter of 1953—several months ahead of the rest of the nation.

Issuance of National Production Authority certificates for the California - Arizona - Hawaii - Nevada area hit a new low last week with only \$2 million involving eight certificates out of the national figure of \$130 million for 90 certificates, or less than 2 pct. Early in the program, aircraft, oil and gas industries boosted the West's share of certificates to 22 pct of the national totals, but averages for the last few months have been 8 to 10 pct.

**Slack Expected**—Western mills are expecting the peak of expansion project requirements in the first quarter and see nothing in the national economy (short of war) which will take up the slack in the second half.

Steel requirements for defense production generally are less than for expansion. During the strike, for instance, defense requirements at Kaiser, lone major producer in operation, didn't exceed 15 pct. And western warehouses do less than 1 pct defense business.

Last week, however, the only immediate perceptible softening of demand was for reinforcing bars since there are so many western producers. Heavy rounds and plates from the East were still very much in demand for as far ahead as the order books have been opened.

**Save Freight**—U. S. Tin Co., which has a 5000-mile haul from Alaskan mines by way of New

York to final smelting in Texas, is looking for a shortcut. A pilot plant has been in operation at Seattle for a year to see if a final \$250,000 smelter there is economically feasible. Currently ore is mined at Lost River, Alaska, and partially concentrated there. Initial separation is done in New York and final smelting in Texas City. A Seattle spokesman last week said, "This is only in the discussion stage and no final verdict has been reached."

**Northwest Power**—Blue skies smiled down on the Northwest last week but got no return smile from industry. Over 1000 firms with 8000 kw connected power face a "brownout" unless rains come soon. In addition to the 395-ton daily loss in aluminum production due to cutoff of 388,000 kw interruptible power supply by Bonneville Power Administration, machine shops and foundries are

experiencing a fall-off in business because drought has closed down logging and the fishing season is over.

Bonneville reports last week showed since Sept. 1 stream flow has been lower than the worst recorded year of 1936-1937.

**Planemaker Delivers**—Transocean Airlines of Oakland, Calif. (THE IRON AGE, July 24, p. 54), delivered the goods last week with typical hustle and bustle. Its new plane assembly subsidiary, Western Sky Industries, turned over first production shipment of wing sections for the Douglas AD-6 Sky Raider only 11 months after formation of the company. Although ground was first broken Feb. 18, Western Sky now has 284 employees in a 60,000-sq-ft, \$1-million plant and \$8 million in sub-contracts from Douglas.

Plant is of somewhat unique construction peculiar to aircraft assembly operations. Floor loads are light but the 6-in. concrete is poured over a 3-ft-deep compacted rock base. This is necessary for firm support of jigs up to 30 ft long whose maximum allowable variation in mating points is  $\pm 0.005$  in. Constant weather is a major factor since abnormal temperature changes will throw these off.

**Rosy Future**—Nothing but prosperity greeted Commerce Secretary Charles Sawyer and three aides on a non-political, fact-finding swing through Colorado, Nevada, California, Utah, Oklahoma and Nebraska.

In California last week Mr. Sawyer said steel production would outstrip demand "by the end of 1953." Next major problem will be distribution, he said, pointing out formation 2 weeks ago of an Office of Distribution in the Commerce Dept. to "advise and help business" but without regulatory powers.



## Machine Tool High Spots

### What's in the NPA Tool Inventory?

**NPA's inventory of 30,000 left-over tools helps ease the tool shortage . . . But new production must fill most critical needs . . . Bright future for replacements—By E. C. Beaudet.**

The net is gradually being drawn tighter around thousands of government-owned machine tools and related production equipment lying idle at various storage points throughout the country. For the first time detailed information on this equipment has been gathered and indexed in one central office in Washington.

The machine tool inventory center, officially known as the Production Equipment Central Inventory Group, has been operated by National Production Authority's Metalworking Equipment Div. since last May. During that time approximately 10,000 pieces of equipment have been added to the government's stockpile of tools left over from World War II.

Of these, 3258 pieces of equipment not in productive use have been allocated to military and defense-supporting manufacturers. Acceptances have averaged around 65 pct. Since September, 1951, over 10,000 tools have been allocated. Total number of tools now being carried in this central inventory comes to 30,000.

**Don't Know**—NPA wants military and defense supporting contractors to screen their records to find out if they can use any of the equipment now being held in inventory. It is believed some contractors do not know about the pool and as a result have not made use of needed tools that are available.

The inventory has been growing rapidly during the last few months and has been instrumental in breaking bottlenecks caused by inability to obtain certain machine tools. PECIG is claimed to have been particularly helpful in ex-

pediting such urgent programs, jet engines, shells and tanks. These efforts were aided by trained teams loaned by machine tool builders to NPA which inventoried the idle government equipment.

**Wide Range**—Available for allocation to military and defense supporting contractors are virtually every type and size of machine tool and related production equipment. These include general, single and special-purpose tools.

Admittedly, many of these tools are not suitable for defense production because of obsolescence or wear. However, a large number could be modernized and put into useful operation. Some sources believe that in the event of full-scale emergency about 90 pct of these reserve tools would be allocated.

**No Cure-All**—While some contractors find the central inventory

a source of relief to procurement problems, it cannot be expected to solve the shortage of critical machine tools. Of the 30,000 pieces of equipment in inventory, some officials claim at least 10,000 are not machine tools. Many are said to be items like chain hoists, conveyor equipment, etc. While these units have a close tie-in with production, they do not actually produce whole items or parts.

Furthermore, there's a notable scarcity of general purpose tools such as are listed in Exhibit D of M-41. This means demand for this type of equipment must still be filled by new production.

**Not Giving All**—Gradually, the services are turning over their idle tools to PECIG, but there is some feeling that they could dig up more tools for listing in the inventory if they wished. Service representatives refute such opinions and insist they are not keeping any items concealed.

The Air Force is proud of its progress in returning to inventory control a lot of machine tools from projects completed or phased-out because of budget changes. Some Air Force officers estimate 1500 machine tools have been recovered in recent weeks and that some of these are practically new. The Army and Navy have contributed much less to the inventory so far.

**More Evidence** — Along this same line, National Machine Tool Builders' Assn. recently estimated that addition of a provision to M-41, freezing non-rated orders 3 months before the required delivery month would help boost replacement business. NMTBA claimed such a provision might over the next 12 months release \$300 million worth of new machine tools for replacement of obsolete models in plants of non-defense manufacturers. And this would not interfere with required delivery of defense orders.





## Story of a tool, a toy and a mold...

Photos and data courtesy of: Product Miniature Co., Inc., Milwaukee, Wisconsin

### ...another complex mold milling problem solved by the Rotary Head method

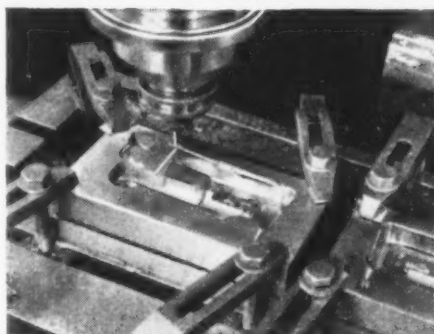
**N**OTICE the fineness of detail on this scale model! A Kearney & Trecker-Milwaukee Model 2D Rotary Head Milling Machine reproduced those details in the mold. No models or templates were used — the operator worked direct from blueprints. Workpiece material was oil-hardening tool steel.

Work was done from exact scale reductions of the real tractor assembly prints—with only

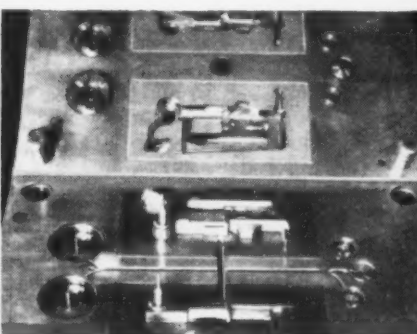
minor details eliminated. There were no delays in beginning, no extra operations. Blueprint dimensions were transmitted directly into metal and fine accuracy was possible because precise control of all operations is built right into the machine.

This exceptionally versatile machine can reproduce geometric shapes in both horizontal and vertical planes. If you have an unusual production problem,

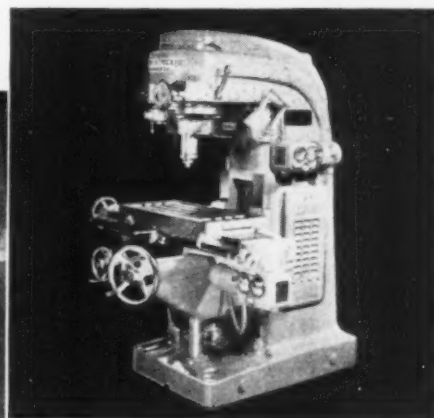
it will pay you to investigate the Model 2D Rotary Head Milling Machine. Write for Bulletin D-20, Kearney & Trecker Corp., Milwaukee 14, Wisconsin.



Set-up for milling two halves of mold not changed until job is done. To insure faster, more accurate results.



Completed mold. Note wheel mold parts. Contours for hubs, spokes milled on Rotary Head machine.



Model 2D Rotary Head Milling Machine for fast accurate machining of production parts, dies, molds, etc.





When sirens scream and fire trucks roar through the streets to battle a blaze caused by a hydraulic line breaking in your die-casting plant, it's *too late*. Too late to prevent a fire. Too late to save lost production due to machinery and building damage. Too late, perhaps, to prevent injury or death to employees.

You can reduce the possibilities of such a disaster by switching to Monsanto Pydraul F-9 . . . *now*. You can change to Pydraul F-9 simply by draining the hydraulic system and refilling with the Monsanto product.

Pydraul F-9 is Monsanto's nonflammable-type hydraulic fluid. Under test conditions, it does not flash or ignite when sprayed, dripped or flooded on molten metal heated to approximately 1,500° F.,

nor does it ignite or flash when sprayed, at 1,000 p.s.i., into the 6,000° zone of an oxyacetylene flame. Users say Pydraul F-9 has prevented fires in their plants.

In addition to increased *safety*, you get *efficiency* and *economy* when you switch to Pydraul F-9. The fluid has high resistance to mechanical shear and chemical breakdown. It is high in lubricity and does not corrode metals from which machines are constructed.

Investigate the increased safety, efficiency and economy of Monsanto Pydraul F-9 today. Contact the nearest Monsanto Sales Office or write for a copy of the 12-page, file-size booklet, "Pydraul F-9." MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

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ada Limited, Montreal.

*Pydraul: Reg. U. S. Pat. Off.*

**PYDRAUL F-9**



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### Materials Controls Begin to End

**Steel, copper, aluminum curbs already eased . . . Ottawa to retain standby powers, but plans to drop actual controls by Jan. 1 . . . Free building, inventory—By F. Sanderson.**

It looks like the beginning of the end for materials controls in Canada. A number of key officials have returned to private life recently, and some curbs have already been relaxed.

Official Ottawa has been close-mouthed, but has said that active controls will be off by year's end. Standby powers will be kept as long as the defense program lasts. This does not mean that industry will be able to get all of everything it wants, but it does remove the need for hunting licenses.

**Free Steel**—Controls on steel, copper and aluminum have recently been relaxed, and further easing should come soon. The two steel orders, SD 1 and 2, will probably be revoked by Jan. 1, freeing steel for inventory, construction.

Steel Div. now issues permits automatically for up to 200 tons of steel for building other than places of amusement and liquor stores. This may soon be upped to 500 tons. Canadian consumers may now buy up to 500 tons of U. S. steel without a permit.

Regional offices of the steel authority will close at the end of this month, leaving only a skeleton staff in Ottawa to close shop.

**Ore Find**—Exploration on Steep Rock Iron Ore Mines Ltd. properties should get a boost from a lucky break a few days ago. Cutters on the dredge at the Hogarth Mine for the first time bit into the big "A" orebody. Ore first to be exposed, assayed 54 pct Fe. A second dredge will go into action at the Hogarth site in a matter of days.

It hasn't been officially confirmed yet, but Inland Steel Co. will probably start another big

drilling program on the "C" orebody sometime this winter. About a dozen drilling rigs are reported lined up ready for work as soon as the ice is safe.

**More Work**—The "C" orebody is located in the northeast part of Steep Rock Lake. Inland made arrangements early in 1950 to explore the area, with an option to lease it for production. Surface diamond drilling was done in 1950-1951 by Inland's subsidiary, Canland Ore Co., but considerable more exploration is needed.

General feeling is that Inland will start a production program soon, even though it has another year in which to make up its mind. Plans call for about 3 million tons of ore per year.

**In Production**—Barvue Mines Ltd. will start producing zinc-silver concentrates at its property in Barraute Township, northwestern Quebec, within a few days. Initial output will be about 1000 tons daily. This will be built up to a minimum of 4000 tons by the end of the year. Cost of bringing the property into production will run a bit more than \$7 million. Orebody is 125 ft wide at the point mining will start, but average width is 103 ft. Length explored to

date is 2500 ft. On the basis of extensive diamond drilling, ore reserves are estimated at 7,650,000 tons averaging 3.3 pct zinc and 1.2 oz silver per ton to 300 ft depth.

Through American Lead, Zinc & Refining Co., Barvue Mines has a contract with a subsidiary of United States Steel Co., covering the sale of 175,000 tons of zinc concentrate at a price of 17.5¢ (U.S.) per lb for zinc. The Barvue mill will have the largest initial capacity of any plant built in Canada.

**Seaway Outlook**—Canadian industry pins fresh hope for U. S. participation in the projected St. Lawrence Seaway project on the political make-up of next year's Congress. Results of next month's U. S. elections will be closely studied by seaway advocates in Canada and in the U. S. to determine what new appeals may be made for the project when the 83rd Congress convenes.

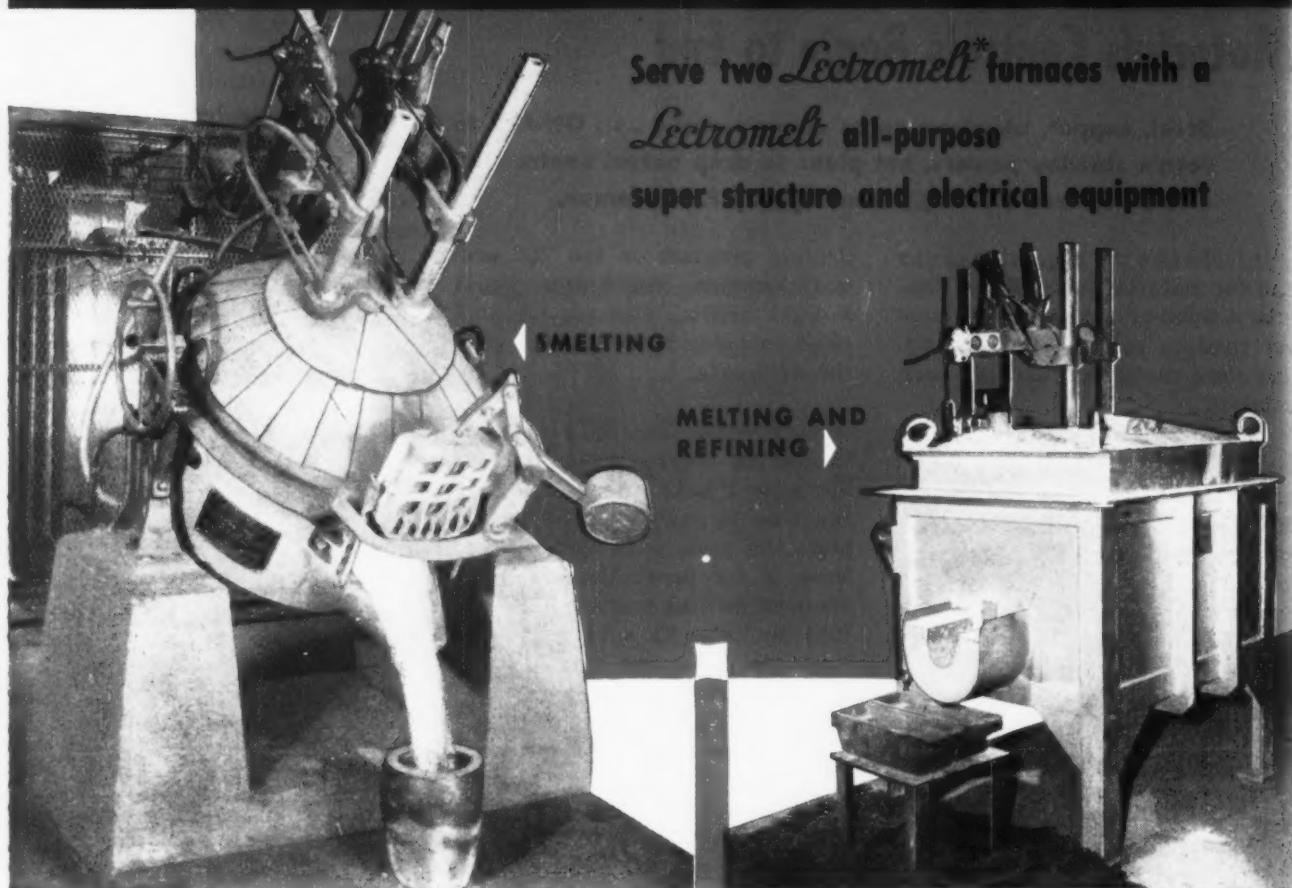
Although neither the Democratic nor the Republican party platforms contain any seaway planks—either pro or con—it is believed in Washington that the new Administration, regardless of its political character, will make a strong pitch to Congress for early U. S. entrance into the seaway.

But whether or not Congress will be any more inclined to approve U. S. entrance into a seaway agreement remains to be seen. Opposition interests, particularly those in eastern seaboard port and railroad circles, still protest.

**How Much**—Current U. S. seaway estimates contemplate that U. S. general cargo would account for about 9 million tons of the total 64.5 to 83.5 million tons which would be moved through the seaway each year. Canadian general cargo would account for another 4 million tons. Expressed in terms of revenue, this means that the U. S. would gain about \$10.7 million in tolls from general cargo, Canada would receive \$3 million.



# Save money in outfitting your laboratory



Serve two *Lectromelt*\* furnaces with a *Lectromelt* all-purpose super structure and electrical equipment

With these two furnace shells and the one Lectromelt superstructure, your laboratory can handle almost any problem having to do with electric furnace operations. The superstructure can be shifted from one furnace to the other, as required, along with its electrical equipment.

The combination at the left is designed for small scale, batch smelting of ores and concentrates, melting of non-metallics, melting and refining of metallics. The furnace at the right can be used for continuous operations in experimenting on the

reduction of ores and melting of non-metallics.

Both furnaces can be employed with direct and indirect arcs. 50 KVA of power is available on low voltages and 100 KVA on high voltages.

Lectromelt engineers have been conducting continuing research for many years on electrothermic reductions, so they can help you put these laboratory furnaces to work proving new processes or improving the old ones. For Catalog No. 104 telling you about this service, write Pittsburgh Lectromelt Furnace Corp., 312 32nd Street, Pittsburgh 30, Pa.

Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . AUSTRALIA: Birlec, Ltd., Sydney . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa.

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These publications describe money-saving equipment and services... they are free with no obligation... just circle the number and mail the postcard.

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Reduction of vibration from power-driven machinery results in increased productivity and decreased maintenance costs. Breakdown of equipment and damage to building structures from vibration can be eliminated by Westsorb absorbing felt designed for machine mountings. Tests have shown that Westsorb will not break down under repeated impact loads and it resists the harmful effects of oils, greases and acids. More information on Westsorb is contained in a new booklet. *Western Felt Works.*

For free copy circle No. 1 on postcard.

## Forgings, castings

Two bulletins covering Henrichshutte Works' forgings and steel and iron castings are available from Davidson Steel Corp. The publications discuss the German firm's fabricating facilities and show typical forgings and castings made for specific applications. *Davidson Steel Corp.*

For free copy circle No. 2 on postcard.

## Microscope in industry

*The Electron Microscope at Work in Industry*, issued by RCA Victor, describes in detail ten case histories in which the electron microscope has been used to solve problems of quality control, product improvement and development of new products in industrial labs. Included in the reports are applications of the microscope in the metal fabrication and automotive fields. *Engineering Products Dept., RCA Victor Div.*

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## Processing equipment

Included in the new catalog covering the sheet metal designing and production facilities of the Burdett Mfg. Co. are ovens, heaters, air makeup units, spray booths and washers. One feature of the heating units is the fact that they may be equipped with the company's well-known Radiant Heat Burners. *Burdett Mfg. Co.*

For free copy circle No. 4 on postcard.

## Finishing

Slanted for metalworking plant operators, *Finishing Engineer*, a new quarterly magazine published by Metalwash Machinery Corp., surveys operations involving cleaning, pickling and drying of metal parts. Featured in the first issue is a story on the Ford Motor Co.'s approach to mass production. *Metalwash Machinery Corp.*

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### Lubrication fittings

Specification sheets are available on Alemite lubrication fittings. Included in the types covered are hydraulic, button head, dot, flush, push and pin fittings. Alemite fittings have exact contours for wide sealing angle and are effectively protected from dirt. *Alemite Div., Stewart-Warner Corp.*

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### Fork trucks

Step-by-step procedure for selecting a fork truck for your plant is clearly explained in a new leaflet put out by Baker-Raulang Co. By checking your truck requirements against specification chart in the folder it is a simple process to determine the model fork truck best adapted to your needs. *Baker-Raulang Co.*

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### Riveting

An informative manual containing operating instructions for automatic rivet-setting machines has been prepared by Milford Rivet & Machine Co. Detailed information is given on the care and operation of rivet setters. There is also material on the operation and adjustment of the Horton non-repeat clutch and the care and operation of automatic spot-setting equipment. *Milford Rivet & Machine Co.*

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### Cutting tools

Included in the Gairing catalog of standard cutting tools are interchangeable counterbores, back spot-facers, core drills, block-type boring tools and standard milling cutters. Specifications and general descriptions of all the tools are given. *Gairing Tool Co.*

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### Jet blade grinder

Manufacturers of jet blades and buckets will be interested in a new pamphlet describing Landis Tool Co.'s Jet Blade Contour Grinder. This unit has been designed to grind five surface elements of jet blades and buckets in one continuous operation. Surfaces that can be ground simultaneously with this grinder are: Platform radius, leading edge, external airfoil surface and trailing edge. *Landis Tool Co.*

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### Automatic palletizing

Lamson Corp.'s automatic pallet loader, described in a new folder, palletizes up to 1800 cartons or cases per hr in predetermined patterns. The pallet loader is capable of forming an infinite number of pallet patterns, but the cabinet is designed to hold up to 18 pattern-forming cartridges. Also listed in the bulletin is engineering data on the standard pallet loader including size limits of pallets and number of cartons that can be handled. *Lamson Corp.*

For free copy circle No. 11 on postcard.

### Arc welding

In the latest issue of *Hobart Arc Welding News* is an interesting article on the part arc welding plays in truck body building. In addition to other stories on arc welding, there is a brief section on Hobart welding equipment. *Hobart Bros. Co.*

For free copy circle No. 12 on postcard.

### Capacitors

Sprague Electric Co. has just released a comprehensive catalog of its transmitter-type mica dielectric capacitors which conform with Joint Army-Navy Specification C-5. Designed as a reference for engineers and purchasing agents, the catalog contains helpful illustrations, engineering drawings and technical characteristics of each unit. *Sprague Electric Co.*

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When you need motors—to serve as a *part* of your product or to help you *make* your product—look to Delco for the motors that will serve you best.

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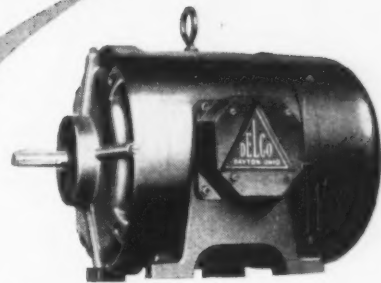
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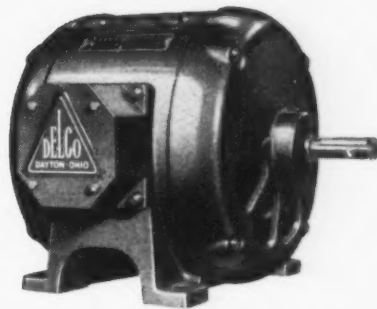


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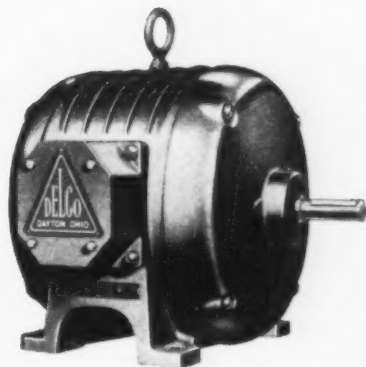
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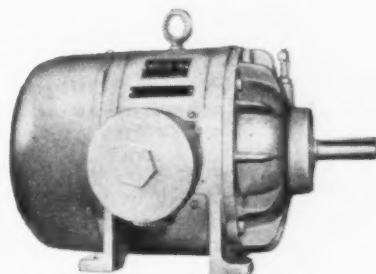
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**HORRIBLE EXAMPLE.** These gun barrel blanks were shipped in wire-bound bundles which were improperly bundled and braced in the gondola. *Results:* barrel ends were damaged, and the entire shipment was in shambles. Many man-hours were required to recover the bundles before they could be unloaded.



**WISE SOLUTION.** At the suggestion of a Signode fieldman, the next shipment was bundled by the tested and approved\* method shown here—with heavy-duty Signode steel strapping. *Results:* Shipment received in perfect condition. Crane was able to unload car rapidly because each bundle was still intact, thus saving time and labor.

**Do this now—to insure against similar losses...**

*First, send for a Signode fieldman!* You will be under *no* obligation. His advice will be sound. It is based on *experience*—and backed by the engineering facilities of Signode! His tested and approved\* recommendations are sure to result in improved packaging and shipping methods, and profitable economies in materials used, manpower and time. Write today for the services of a Signode fieldman!

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## Free Publications

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### Metal cutting

De Walt ME-I Metal Cutting Machine has been designed to speed up cut-off operations. The machine will cut off ferrous and nonferrous bar stock up to 3 in., light wall steel tubing up to 4 in., flat bar stock up to 1 x 4 in. and structural shapes up to 4 in. on a side. To assure complete operator protection, the entire cutting unit including the cutting mechanism is totally enclosed. *DeWalt, Inc.*

For free copy circle No. 14 on postcard, p. 69.

### Chrome plating

Chromaster Model A-250 is an industrial hard chrome-plating unit designed for chrome-plating cutting tools, dies, gears, pistons and other machine parts and components. Chromasol, the chrome-plating solution used in the Chromaster, plates directly on industrial steels, cast irons and most nonferrous metals. With the Chromaster and Chromasol, normal life of most cutting tools and wear parts can be increased 3 to 10 times. More information is available in a new circular. *Industrial Chrome Div., Ward Leonard Electric Co.*

For free copy circle No. 15 on postcard, p. 69.

### Drives, drill shafts

Econoflex drives and drill shafts are complete units that can be attached to any power source. There is an Econoflex drive unit for heavy, medium and light duty use. Also illustrated and described in a new folder are accessories such as angleheads, special hand pieces, bench stands and wheel guards. *Elliott Mfg. Co.*

For free copy circle No. 16 on postcard, p. 69.

### Slide rule

A slide rule for calculating weights of all flat sheet metal is available without charge from Dayton Rogers Mfg. Co. To determine the weight of a piece of sheet metal by slide rule, all that has to be known is the width of the sheet or strip and the pitch or number of lineal ft required for one to 100 pieces. *Dayton Rogers Mfg. Co.*

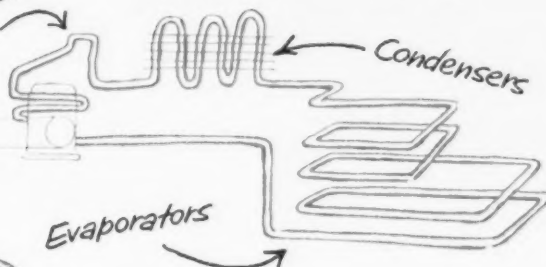
For free copy circle No. 17 on postcard, p. 69.

# Bundyweld "Doodles"

to jog a  
designer's imagination

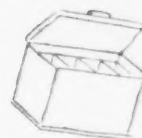


Compressor  
Parts

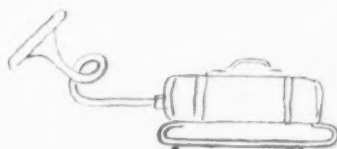


Condensers

Evaporators



Landing Net

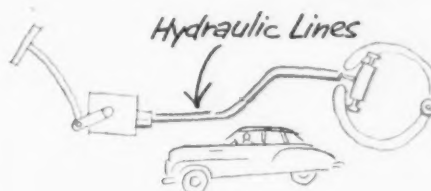


Runners for  
Vacuum Cleaner

**Working** out a new part design? Then why not let Bundyweld Tubing and Bundy engineering skills help you get better-functioning parts, faster fabrication, lowered costs?

Bundyweld performance qualities make it practical for a wide choice of applications. And, with their tested experience in designing and fabricating tubing parts, Bundy engineers can often point out ways to save you time, material, money. Write for a catalog today.

Bundy Tubing Company, Detroit 14, Michigan



Hydraulic Lines

## Bundyweld Tubing

DOUBLE-WALLED FROM A SINGLE STRIP

Leakproof  
High thermal conductivity  
High bursting point  
High endurance limit  
Extra-strong  
Shock-resistant  
Ductile

Lightweight  
Machines easily  
Takes plastic coating  
Scale-free  
Bright and clean  
No inside bead  
Uniform I.D., O.D.

### WHY BUNDYWELD IS BETTER TUBING



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .



continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .



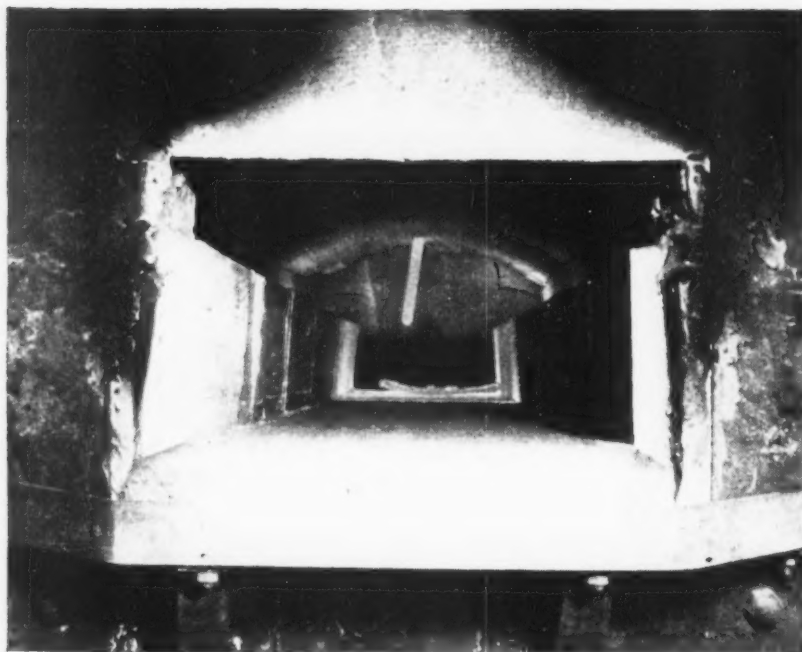
Bundyweld, double-walled and brazed through 360° of wall contact.



SIZES UP  
TO 3/4" O.D.

**NOTE** the exclusive patented Bundyweld beveled edges, which afford a smoother joint, absence of bead and less chance for any leakage.

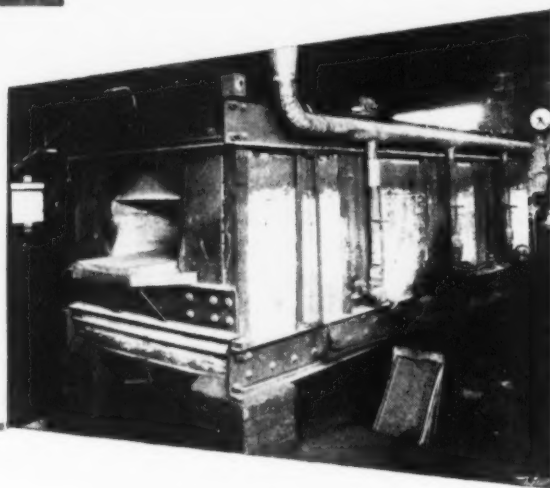
Bundy Tubing Distributors and Representatives: Cambridge, 42, Mass.: Austin-Hastings Co., Inc., 226 Binney St. • Chattanooga 2, Tenn.: Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg. • Chicago 32, Ill.: Lapham Hickey Co., 3333 W. 47th Place • Elizabeth, New Jersey: A. B. Murray Co., Inc., Post Office Box 476 • Philadelphia 3, Penn.: Rutan & Co., 1717 Sansom St. • San Francisco 10, Calif.: Pacific Metals Co., Ltd., 3100 19th St. • Seattle 4, Wash.: Eagle Metals Co., 4755 First Ave. South Toronto, Ontario, Canada: Alloy Metal Sales, Ltd., 181 Fleet St., E. • Bundyweld nickel and Monel tubing is sold by distributors of nickel and nickel alloys in principal cities.



Here's how the CARBOFRAX hearth and side baffles looked after 15 months service — practically like new. Since silicon carbide is among the hardest of man made products, a hearth like this can take even the toughest abrasive wear and show hardly any signs of it.

This pusher-type, semi-muffle furnace is used for general heat treating. It is oil fired, operates 5 days a week at temperatures from 1350 F to 2100 F. Alloy trays carry the small parts, larger castings (up to 30 lbs) rest directly on the hearth.

*In one year*  
**CARBOFRAX** *refractories*  
*saved over 30 days downtime*



This same heat-treating furnace was able to turn out far more work, with far fewer shutdowns, simply by changing from one type of refractory to another. Originally equipped with 4" thick fireclay floor and side baffles, the output of this furnace was 6 tons a day (8-hr). At best, furnace efficiency was low, and there was rapid wear on the hearth caused by unevenly shaped castings being treated. Every month, a 2 to 3 day shutdown was required for refractory repairs. And 2 or 3 times each year, the hearth would be beyond repair and need complete replacement.

Then, CARBOFRAX silicon carbide refractories replaced the clay. Because they could be made thinner and because of their far greater thermal efficiency (CARBOFRAX refractories conduct heat 11 to 12 times faster than fireclay), furnace output

immediately jumped from 12,000 to 15,000 lbs a day. *A gain of one full day's production every 4 days.*

As for refractory maintenance, it all but ceased. 18 months after installation the CARBOFRAX hearth was in perfect condition, still hard and true. Maintenance up to this time: ZERO.

In other words, after 18 months the CARBOFRAX hearth had not only outlasted 3 fireclay hearths, but saved roughly 45 days of downtime. Plus the labor. Plus the materials. Plus the lost production. And, it was still in excellent condition, still helping to deliver an extra 7½ tons of work per week, every week.

To find how these refractories can benefit *your* furnaces simply write to Department B-102, Refractories Division, The Carborundum Company, Perth Amboy, New Jersey.

**Use Super Refractories by**

**CARBORUNDUM**

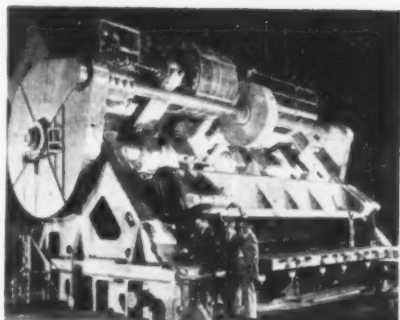
Trade Mark

*"Carborundum" and "Carbofrax" are registered trademarks which indicate manufacture by The Carborundum Company.*



# NEW equipment

New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 69 or 70.

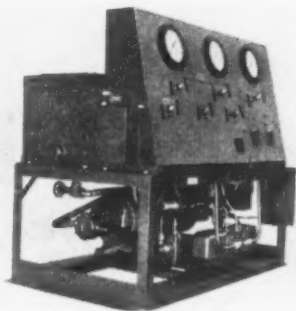


## Kickup machine bends steel sheets edgewise

This massive press bends steel sheets edgewise in the manufacture of automobile and truck frames. Using a combination of mechanical, magnetic and hydraulic power, it can reshape steel sheets 19 ft long x between 5/16 and 5/64 in. thick; will take material 16 in. wide. The edgewise bending process effects

important savings in steel consumption. The machine is set in a deep box-like foundation 15 ft below the floor level. Inside the pit is much of the hydraulic mechanism that lifts the ram and assists in holding it tightly down on the piece being shaped. *A. O. Smith Corp.*

For more data circle No. 18 on postcard, p. 69.

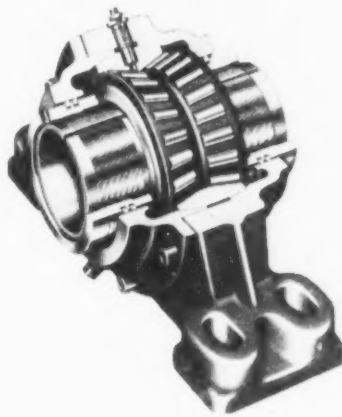


## Gas booster is hydraulically driven

A hydraulically driven compressor booster takes bottled gas from 300 to 2000 psi and boosts it to any given output pressure up to 12,000 psi. With a 10-hp motor it delivers approximately 1.5 cu ft per min up to 1250 psi over input bottle pressure and approximately 0.9 cu ft per min from 1250 psi up to maxi-

mum receiver pressure. This is accomplished by means of a high-low automatic unloading pump system which increases the efficiency of the unit by about one-third over a single pump system. The booster is used in guided missile work. *Haskel Engineering & Supply Co.*

For more data circle No. 19 on postcard, p. 69.

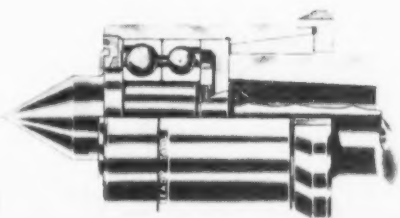


## Steel pillow blocks take heavy-stock loads

All-steel pillow blocks provide high load-carrying capacity in a compact and rugged package. Engineering resources and bearing building experience of Dodge and Timken have been pooled to produce this new line of pillow blocks. High radial and thrust capacities of the new bearings and the stamina to take heavy-shock loads have been provided within minimum dimensions and with far less than

usual weight. Bearings are fully self-aligning, with spherical outer race. They are available in both expansion and non-expansion types. Double piston ring seals keep the lubricant in and dirt and dust out of the bearing mechanism. Bearings are sealed both on and off the shaft. They will be provided in shaft sizes from 2 15/16 to 10 in. and shipped from stock ready to install. *Dodge Mfg. Corp.*

For more data circle No. 20 on postcard, p. 69.



## Outside spindle center turns large parts

For manufacturers who must turn and grind large parts weighing up to 12 tons a new, improved Red-E heavy duty anti-friction, super-accurate center has been designed. It features a large special collet arrangement that clamps over the

outside diameter of the tail stock quill. Duplex arrangement of angular preloaded precision bearings assures smooth operation free from any end or side play. *Ready Tool Co.*

For more data circle No. 21 on postcard, p. 69.

Turn Page



**NEW!**

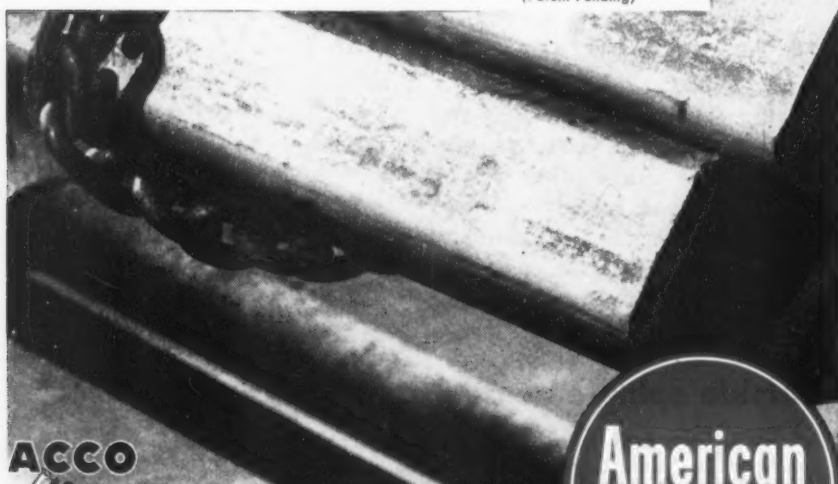


## Lock 'em—and Leave 'em

• If you have a problem lifting, moving or containing bundles of bars, rods, or pipes—forget it. Get some of the new **AMERICAN Bundling Chains** with automatic locks. They're easy to hook up, and once you lock them, they stay locked. Yet you can unlock them with a flip of the fork. Satisfied users tell us they have made possible real savings in handling costs.

Write today for information on **Bundle Locks** or the 1001 other items in the complete **AMERICAN Chain line**.

(Patent Pending)



**ACCO**



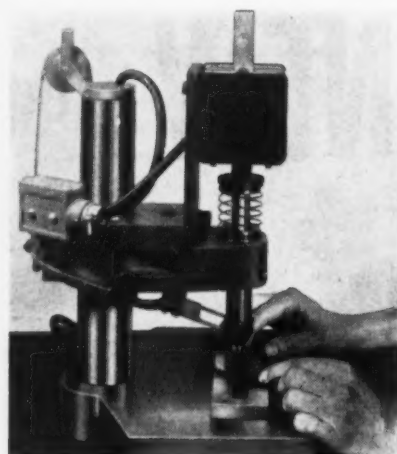
**AMERICAN CHAIN DIVISION  
AMERICAN CHAIN & CABLE**

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles,  
New York, Philadelphia, Pittsburgh, Portland,  
San Francisco, Bridgeport, Conn.

**American  
Chain**

## New Equipment

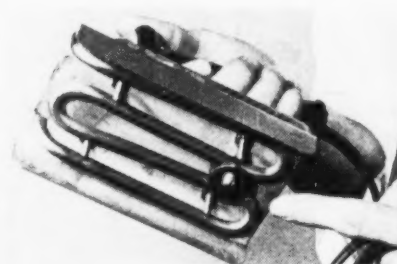
Continued



## Staking machine

Reduced operator fatigue and increased production are claimed for an all-electric staking machine. Basic improvement consists of powering the machine by a solenoid rather than a spring loaded trip hammer. Both hold-down pressure and staking blow are fully adjustable. Worker operates the Electro-stake by lightly touching a foot treadle. The machine is used for assembly-line operation where two or more assembled parts must be pressed firmly together and then staked or riveted with a sharp blow. *Black & Webster, Inc.*

For more data circle No. 22 on postcard, p. 69.



## Electric paint remover

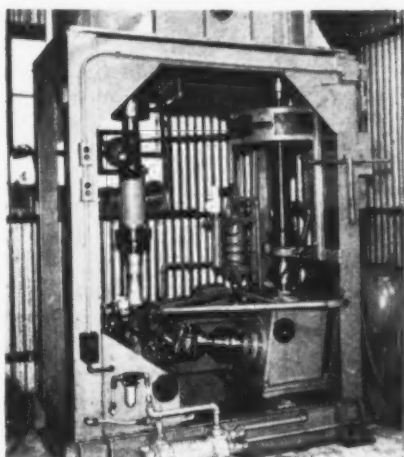
New Calrod paint remover removes paint quickly and economically using radiant heat. The device consists of two skids under which is mounted a Calrod tubular heater rated at 1000 w, 115 v. When the device is slid along a painted surface, the heat from the Calrod unit causes the paint to soften and blister; it can then be removed with a putty knife. *General Electric Co.*

For more data circle No. 23 on postcard, p. 69.

## Quick-dip conveyer

The Quick Vertical Dip is a production line unit used to step up the progressive stages of military packaging involving washing, degreasing, rinsing, drying, finger-print removing, preheating, preservative dipping and final drying. The Quick-Dip features a 9-in. radius with the cable conveyer at a 60° incline. The conveyer may range in overall length from a single 10-ft loop to 1600 ft dual drive units. Loads up to 160 lb can be carried on standard stock trolleys. Units are shipped in stock sections. *E. W. Buschman Co.*

For more data circle No. 24 on postcard, p. 69.



## Testing gear cases

Testing gear cases and related mechanical power transmission components may be done under full load and full speed by the square rig method: power of the driving motor is 5 to 10 pct of the rated power of the unit to be tested. The method is economical and may be done inside a laboratory or test room with little or no supervision, and for any duration. The square rig testing machine illustrated shows a setup for testing a helicopter power transmission gear case of 275 hp and a gear ratio of about 8:1. Load can be adjusted from zero to any desired value up to 115 pct of full load. Load test stands can be built for virtually any type of gear case or other power transmission unit. *Technical Development Co.*

For more data circle No. 25 on postcard, p. 69.

Turn Page

October 16, 1952



featuring  
**DUALOC\***

## Can YOU Do This?

● Do your slings give maximum safety in handling the 101 odd loads that your crane moves daily? A combination of **ACCO Registered Wire Rope Slings**, as shown above, can be used safely because all fittings and attachments have full rope strength.

The **DUALOC** Ending produces the strongest wire rope sling made. Two collars insure uniform strength from sling to sling. Actual strength certified by warranty certificate. Preformed improved plow steel Green Strand wire rope with steel core assures maximum resistance to kinking.

Popular sizes in stock for immediate delivery.

*\*Trade Mark Registered*

**ACCO**



**WIRE ROPE SLING DEPARTMENT  
AMERICAN CHAIN & CABLE**

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles,  
New York, Odessa, Tex., Philadelphia, Pittsburgh,  
San Francisco, Bridgeport, Conn.

**ACCO  
Registered  
DUALOC  
Slings**





Put some

Spring  
in your  
assembly

see the man with a

## Versatile Torrington Spring Coiler

In spring coiling, the words "Torrington" and "Versatile" are synonymous! When you desire springs produced to meet exacting requirements, just call the professional springmaker who has a Torrington coiler. He's the man who can fill your needs with accuracy, speed and economy. On special springs, our sales department will gladly assist you in finding a source of supply, or help your springmaker devise just the right tooling to produce it.

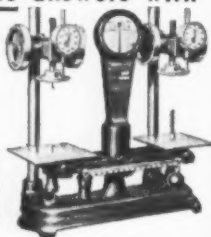
Torrington's 14 different Spring Coilers cover a range of wire diameters from .003" to .750"



MODEL W-11 SPRING COILER

Wire diam. range: .015" to .072". Length per spring: 0" to 42". O. D. Coil Range: 3/32" to 1 9/16". Produces 23 to 190 springs per minute with variable speed drive. Extra wire feed gears, torsion, other attachments available.

NOW... Spring Makers and Users  
can get the same answers with  
The  
TORRINGTON  
SPRING TESTER



An accurate, uniform and inexpensive means of measuring spring load and deflection!

For inspection or in-use testing... to aid in designing and developing springs for specific uses or as a basis for statistical quality control. Write today for illustrated bulletin on the Torrington Spring Tester!

**THE TORRINGTON**  
MANUFACTURING COMPANY  
TORRINGTON, CONNECTICUT

## New Equipment

Continued

### Cylindrical grinder

Built in 18, 24 or 30-in. swing and in work lengths of 48, 72, 96, 120, 144 or 168-in., this new cylindrical grinder provides faster grinding action and simplified set-



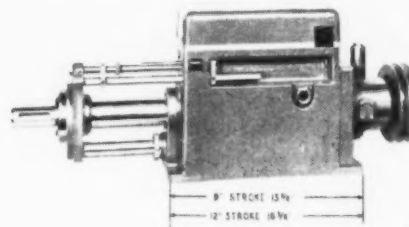
up and operation. All feed and speed controls are at the front for quick adjustment. A click-count indexing mechanism permits settings of 0.0001 in. work diameter without visual attention. Many other features add to operating speed and ease. *Norton Co.*

For more data circle No. 26 on postcard, p. 69.

### Quick aid

A quick-aid combination fire extinguisher cart is equipped with three extinguishers designed to combat all types of fires. This Handy Fire Dolly is mobile and easily wheeled into the emergency area; the proper extinguisher can be selected and brought into action at once. *General Detroit Corp.*

For more data circle No. 27 on postcard, p. 69.



### Drill unit

A small self-contained production tool can be mounted on a machine in any position for extra drilling and boring jobs. Spindle is direct-driven by an electric motor; control is by pushbutton; travers rate is over 400 ipm, feed rate to 30 ipm; capacity 1/2 in. in steel. Speeds can be varied by changing sheaves and belts. *Drillunit, Inc.*

For more data circle No. 28 on postcard, p. 69.

Turn Page

# Specify SQUARE D Motor Starters for 3 Important Reasons



*Easy to Wire!*

Plenty of wiring space.  
Handy solderless terminals.

*Easy to Get At!*

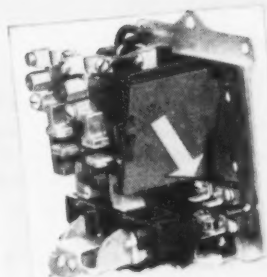
Coils, contacts or overload  
relays can be changed in no  
time at all—without disturb-  
ing external connections.

*Easy to Live With!*

Straight line guided motion  
minimizes wear; large silver  
alloy contacts insure trouble-  
free electrical performance.



"Off-the-Shell" Parts Kits make normal maintenance easier than ever. Each kit contains parts necessary to replace all load contacts and finger springs. An illustrated service bulletin is enclosed to provide quick parts identification and complete installation instructions.

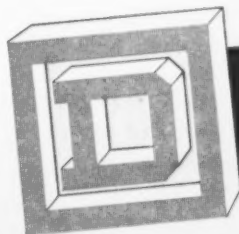


ELECTRICAL INTERLOCKS are available in kit form. Practically any necessary number or arrangement of extra interlock contacts can be added to any standard starter. Sizes 2 and 3 starters will soon have new front-of-panel mounting interlocks for easier installation.  
(See cutaway at left)

Write for Bulletin 8536.

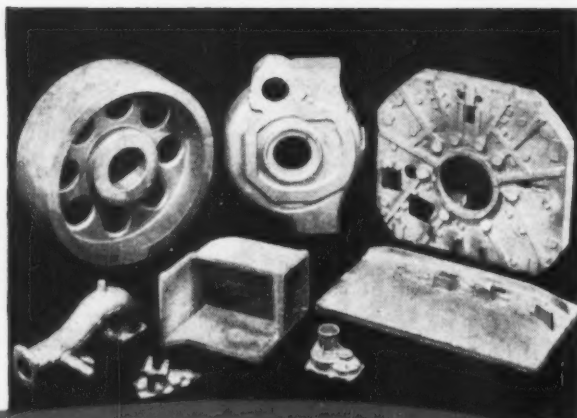
Square D Company, 4041 N. Richards Street, Milwaukee 12, Wisconsin.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS



## SQUARE D COMPANY

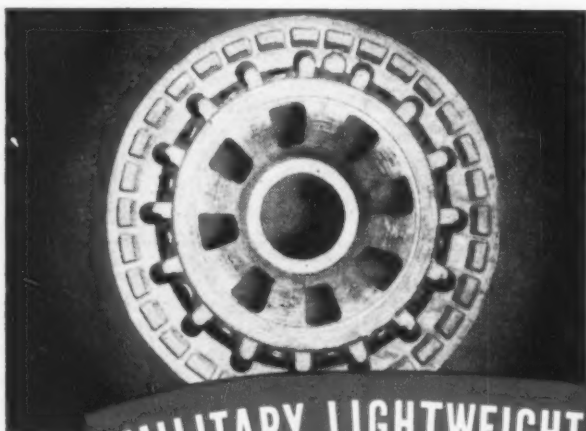
*\*Well-Cast*



## COMMERCIAL LIGHTWEIGHT CASTINGS

Your commercial requirements for lightweight castings in aluminum or magnesium may be tough, but we'd welcome an opportunity to look them over. We've tackled a good many diversified casting problems over almost a half century.

Our four completely equipped plants and their trained personnel are at your disposal.



*\*Well-Cast*

## MILITARY LIGHTWEIGHT CASTINGS

Aircraft wheels, strut parts, engine parts and miscellaneous components are being made every day at our plants, in aluminum and magnesium. X-Ray inspection, close attention to detail, complete facilities for production in sand, semi-permanent and permanent mold form.

**Well-Made Wood and Metal Patterns.**

**Well-Cast Ampco Bronze Castings.**

\*Copyrighted Trade Name.

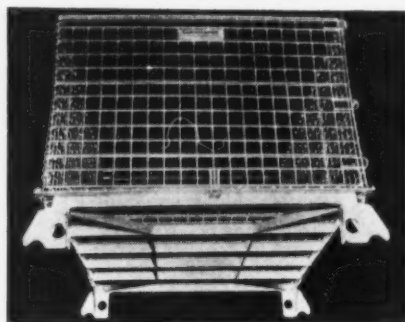
If you would like to receive the Wellman Magazine each month without charge, drop us a note on your business letterhead.

**THE WELLMAN BRONZE & ALUMINUM CO.**

DEPT. 8, 12800 SHAKER BLVD., CLEVELAND 20, OHIO

## New Equipment

*Continued*



### Clearview container

New features of the Clearview Cargotainer for storage, shipment or assembly-line operations include new leg design that makes stacking more secure and easier. Center legs have been eliminated which allows the use of any type moving equipment. The Cargotainer can be loaded above the top wire and still stack securely. Special corner plates resist shock. Five folded Cargotainers now occupy the space of one unfolded. Exhaustive tests made with 5200-lb loads prove that the container will stand up. *Pittsburgh Steel Products Co.*

For more data circle No. 29 on postcard, p. 69.

### Packaging parts

Bulk packaging of bearings, bushings and similar precision parts for domestic and export shipment can be simplified and improved using a new heavy duty corrugated box. The box is easily put together without stitching; each outer cap is formed by folding over its edge-flaps, and each cap is slipped over the inner regular slotted box. Extra thicknesses of corrugated board provide reinforcement for supporting heavy loads. Printed in color the box acts as a traveling billboard. *Hinde & Dauch Paper Co.*

For more data circle No. 30 on postcard, p. 69.

### Water repellent

Silicon type water repellent for use on exterior and interior masonry surfaces assures deeper penetration into the surfaces; prevents staining and efflorescence. *Wilbur & Williams Co.*

For more data circle No. 31 on postcard, p. 69.



## Welded aluminum tubes

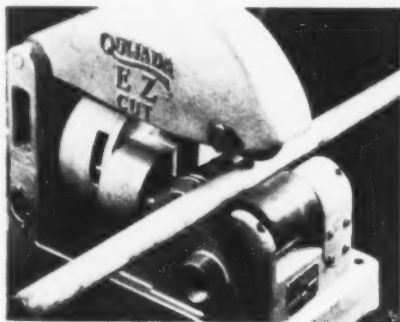
New heat exchanger tubes are made by longitudinally butt welding Alclad 3S-H12 aluminum alloy sheet, rather than drawing seamless aluminum tubes. In two standard sizes, 1-in. OD with 0.049-in. and 0.065-in. wall thicknesses, the tubes are low-cost and provide double-barreled protection against corrosion. They have the protective Alclad coating on both inside and outside surfaces. Typical tensile strength for Alclad 3S-H12 welded tubes is 17,000 psi and yield strength 14,000 psi. *Aluminum Co. of America.*

For more data circle No. 32 on postcard, p. 69.

## Metal strapping

Small coils of strap cut to exact customer's specifications are now available for use with portable kits. Coils of any width or thickness in stainless, Monel, etc., can be furnished in lengths up to 36 in. Company will also coil customer's strap if sent to factory. *A. J. Gerrard & Co.*

For more data circle No. 33 on postcard, p. 69.



## Pipe cutter

Named the E-Z cutter, a new portable pipe, tube and conduit cutter is suitable for on-the-job cutting in large and small shops. It features power driven rollers that revolve around the pipe; cutting is continuous, slippage is eliminated and the heat treated, high speed tool steel cutter wheel does not wear in one spot. Pipe  $\frac{3}{8}$  to 2 in. and tubing  $\frac{5}{8}$  to 3 in. can be cut. Foot control switch leaves the operator's hands free to handle work; speeds up cutting. *Quijada Tool Div. of Gaines-Collins.*

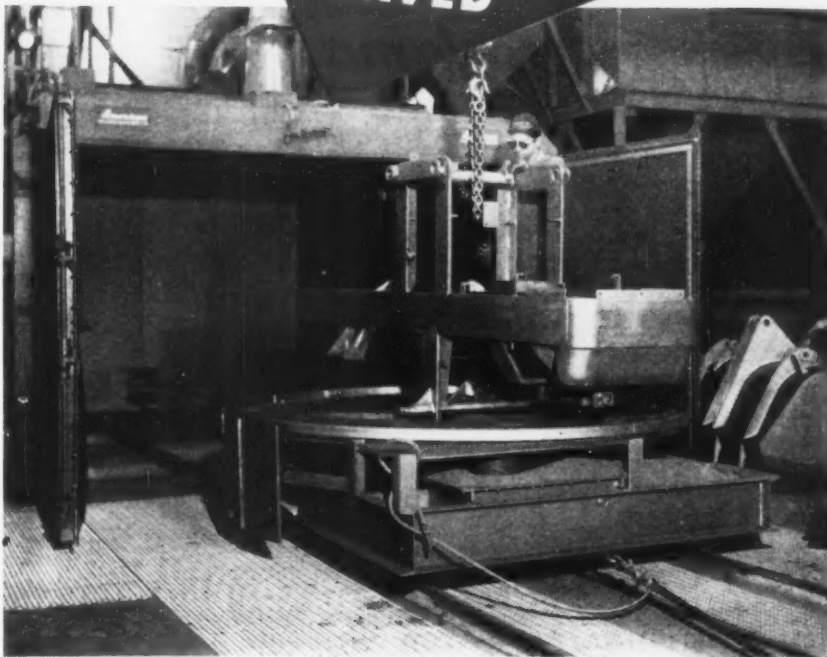
For more data circle No. 34 on postcard, p. 69.

Turn Page

October 16, 1952

production tripled

64 man hours  
SAVED



## cleaning weldments for Frank G. Hough Company with a WHEELABRATOR

Welding spatter and flux is removed in minutes by the airless Wheelabrator to save hours of wire brushing, grinding and chiseling. Welded areas are spotlessly cleaned to provide a perfect anchor for bonding the final finish.

For the Frank G. Hough Co., where two full shifts and 14 men had been unable to maintain existing schedules by wire brushing, chipping and grinding, the Wheelabrator handles the vastly expanded production at a savings of 64 man hours daily. Finishing operations have been placed on a production of dollars in production costs. In addition, the thoroughness of Wheelabrator cleaning provides a uniform surface to which paint adheres tenaciously.



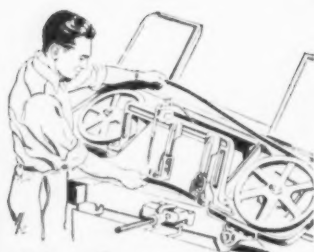
The use of the Wheelabrator in the welding industry is described in the bulletin, "How Weldments are cleaned faster and cheaper with a Wheelabrator." Airmail your request for a free copy today.

**American Wheelabrator**  
WHEELABRATOR & EQUIPMENT CORP.  
AIRLESS BLAST  
CLEANING

510 S. Byrkit St., Mishawaka, Ind.

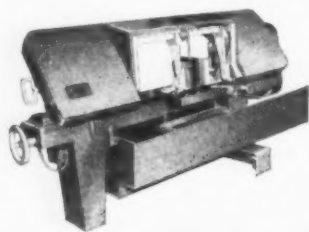
WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT

**You can  
CHANGE  
BLADES  
FASTER**



## **Kalamazoo METAL CUTTING BAND SAWS**

No stooping, no fumbling... just swing saw cover open and everything is at your fingertip. Release blade tension, remove blade, insert new one and tighten. It's as simple as that! Result? Minimum loss of time, less chance of damage to blade and of injury to operator.



This is but one of many exclusive Kalamazoo features that add up to lowest cost intermittent or continuous cutting. It will pay you to specify Kalamazoo Metal Cutting Band Saws... three sizes, available with coolant system and casters.

MACHINE TOOL DIVISION

**Kalamazoo TANK and SILO CO.**  
1016 HARRISON ST., KALAMAZOO, MICHIGAN

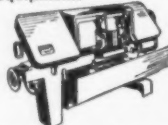
Remember...  
there's a  
**Kalamazoo**  
Metal Cutting Saw  
to fit your  
exact needs



Model 610 cuts 6" round and 6" x 10" flat. Coolant equipment available.



Model 816 cuts 8" round and 8" x 16" flat. Model 824 cuts 8" round and 8" x 24" flat. Both models are available with coolant equipment.



Heavy-duty Model 1220 cuts 12" plus on rounds and 12" x 20" flat. Available with or without coolant equipment.

## **New Equipment**

*Continued*

### **Hard steel drill**

A new carbide tipped hard steel drill features a solid carbide slug which is sandwich brazed to an alloy steel shank. The brazing process bonds carbide to steel in a V notch to assure exceptional torque strength when drilling heat-treated steel. Torque of driving is not dependent upon the braze, but on the way the carbide is held by the shank. Flute length is designed for average depth holes. Drills range from 1/8 to 1/2 in. diam in increments of 1/32 in. *Nelco Tool Co.*

For more data circle No. 35 on postcard, p. 69.



### **Work gloves**

Armor grip work gloves are made with closed, flexible metal zippers permanently bonded to fingers and palms in synthetic rubber, providing positive gripping action and long wearing qualities along with maximum pliability. Mittens and palm guards also provide the worker with a multiple safety factor against impact, cutting and abrasive wear. *Surety Rubber Co.*

For more data circle No. 36 on postcard, p. 69.

### **Gate valve**

Motor operated gate valve is said to be one of the lightest and most compact developed. New method of manual over-ride, and complete elimination of rubber or synthetic rubber are important features. Teflon, selected for its high fuel resistance, replaces rubber. Limit switching arrangement makes it impossible for the valve to stop in mid-position, eliminating possible operating failures. The valve operates with aircraft fuel, engine oil, hydraulic oil, alcohol, water, air, and gas. *Hydro-Aire, Inc.*

For more data circle No. 37 on postcard, p. 69.

**Turn Page**

## **ENGRAVING and MARKING**

*The Green Engraver*



**ENGRAVES,  
ROUTS,  
PROFILES and MODELS**

A real money saver for industry. Proven by the experience of tool and die, electronic machine, radio, electrical and instrument manufacturers.

The Green Engraver zips out precision work on metal, plastics, wood, glass, hard rubber etc. . . engraves panels, name plates, scales, dials, molds, lenses, instruments, instruction plates, directional signs . . . by simple tracing. Routing, profiling and three dimensional modeling indicate its versatility. Electric etching attachment available.

**FREE — Fact-packed folder yours upon request.**

**Green Instrument Company**  
INCORPORATED

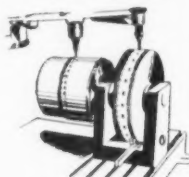
365 PUTNAM AVENUE • CAMBRIDGE, MASS.



STENCIL



NUMBERED RING



RULED DRUM

Specify the Green Engraver for the best in low cost performance. Special attachments and engineering service available for production work.

## MORTARS



## PLASTIC FIREBRICK



## CASTABLE REFRACTORIES



THESE

*High Quality*

## A. P. GREEN REFRACTORY PRODUCTS

REDUCE DOWN TIME AND  
OPERATING COSTS

A. P. Green refractory products have proved in service that high quality pays off in greater tonnages, smoother operation, and lower maintenance costs.

There is an A. P. Green product designed to meet industry's requirements for almost any type of service. You'll find that it pays to standardize on A. P. Green quality products.

For specific recommendations on your refractory problems, get in touch with your local A. P. Green distributor. He is listed in the yellow pages of your phone directory.

### A. P. GREEN FIRE BRICK COMPANY

Mexico, Missouri, U. S. A.

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Toronto 15, Canada

*A. P. Green*  
**REFRACTORY  
PRODUCTS**



DISTRIBUTORS IN  
THE PRINCIPAL CITIES  
OF THE WORLD



Headquarters for

**52100**

Steel Tubing and Bars

**Largest  
Stocks  
in  
the  
Country..**

of this versatile steel, 52100 is hard, tough and long-wearing, yet it's easy to machine and is right for bearings, sleeves, pins, collars and many other machine parts.

Over 200 seamless tube sizes to choose from .898" O. D. to 8.250" O. D. Bar sizes from .171" round to 7.5" round. Also ring forgings in any analysis.

**Write for our  
Latest Stock List Now**

**New Headquarters of  
Peterson Steels, Inc.  
Union, New Jersey**



**PETERSON STEELS, INC.**

DEPT. I, SPRINGFIELD ROAD  
UNION, NEW JERSEY

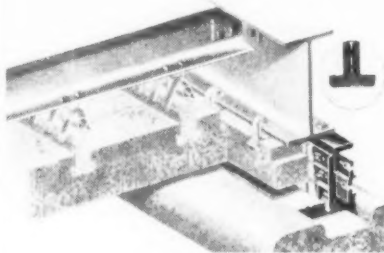
Detroit, Mich. • Chicago, Ill.

## New Equipment

Continued

### Sand seal shoe

Keeping sand in the coping of a soaking pit at a uniform depth is possible with a double seal self-equalizing sand seal shoe. It consists of a pair of opposed shoe castings which when bolted to the pit frame forms an inverted V slot where they penetrate the sand. As



these castings displace the sand, the sand so confined will compact, moving both upwardly and endwise so as to completely fill the triangular space; this forms a positive double sand seal. *Geo. P. Reintjes Co.*

For more data circle No. 38 on postcard, p. 69.

### Wire cup brush

A new wire cup brush with replaceable filler has been developed for removal of rust, scale, paint and welding slag from railroad equipment, tanks, gears and other metal surfaces. The brush consists of inner and outer metal adapters with a replaceable cup-shaped filler in which wire bristles are anchored in place with rubber. Wire gages range from 0.014 to 0.028 in. *Hewitt-Robins Inc.*

For more data circle No. 39 on postcard, p. 69.

### Spring tester

Loads and deflections of small compression and extension springs are accurately measured by a new spring tester having load range capacity from ½ oz to 25 lb. Scale is accurate to within ¼ of 1 pct meeting the National Bureau of Standards requirements. Steel rules measure lengths in 32nds and 64ths on one side and decimals in 10ths and 100ths on reverse side. Speed of testing varies from 250 to 500 tests per hr. *Carlson Co.*

For more data circle No. 40 on postcard, p. 69.

### Vinylite tarpaulins

Made of DuPont 10 gage Vinylite, these tarpaulins are half the weight of duck tarpaulins and cost half as much; are said to be more durable and tough. They are 100 pct waterproof, crackproof, peelproof; resistant to abrasion, motor oils, and most chemicals, and will not warp or shrink after prolonged weathering and exposure to wide temperature fluctuations. Non-inflammable, they protect varied sizes and shapes of industrial equipment during shipment and while stored out-of-doors. Grommets are inserted at 3-ft intervals. *American Agency.*

For more data circle No. 41 on postcard, p. 69.

### Folding scaffold

Fold-A-Way scaffold is a folding aluminum rolling scaffold designed for easy carrying and erection. It is made of tubular frames hinged to open sideways so that one man is able to erect or dismantle the base section while standing within the base area without danger of frames folding under during erection. Sections are preassembled. *Patent Scaffolding Co., Inc.*

For more data circle No. 42 on postcard, p. 69.



### Steam cleaner

A new fireless steam cleaner has no fire box, gets its heat and pressure from steam lines used for regular production and heating purposes. At full capacity, it delivers 200 gal of hot solution per hr at temperatures to 212°F and pressures to 90 psi. Solution tank holds 50 gal, enough cleaning compound in solution to operate 4 to 6 hr without refilling. Variable-volume pump keeps steady high-pressure cleaning stream even when steam is low. *Malsbary Mfg. Co.*

For more data circle No. 43 on postcard, p. 69.



Everybody gets into the act . . .

**T**hat's the way we want it to be, here at Claymont.

Because that's the way we make sure that your order for alloy steel gets careful, individualized supervision . . . painstaking attention to every processing detail right from the front office, through our laboratories, down to the men who roll your steel.

Let us show you how our *personal touch* assures you of alloy steels that are truly tailored to your specialized requirements.

Write or call Claymont Steel Products Department, Wickwire Spencer Steel Division, Claymont, Delaware.

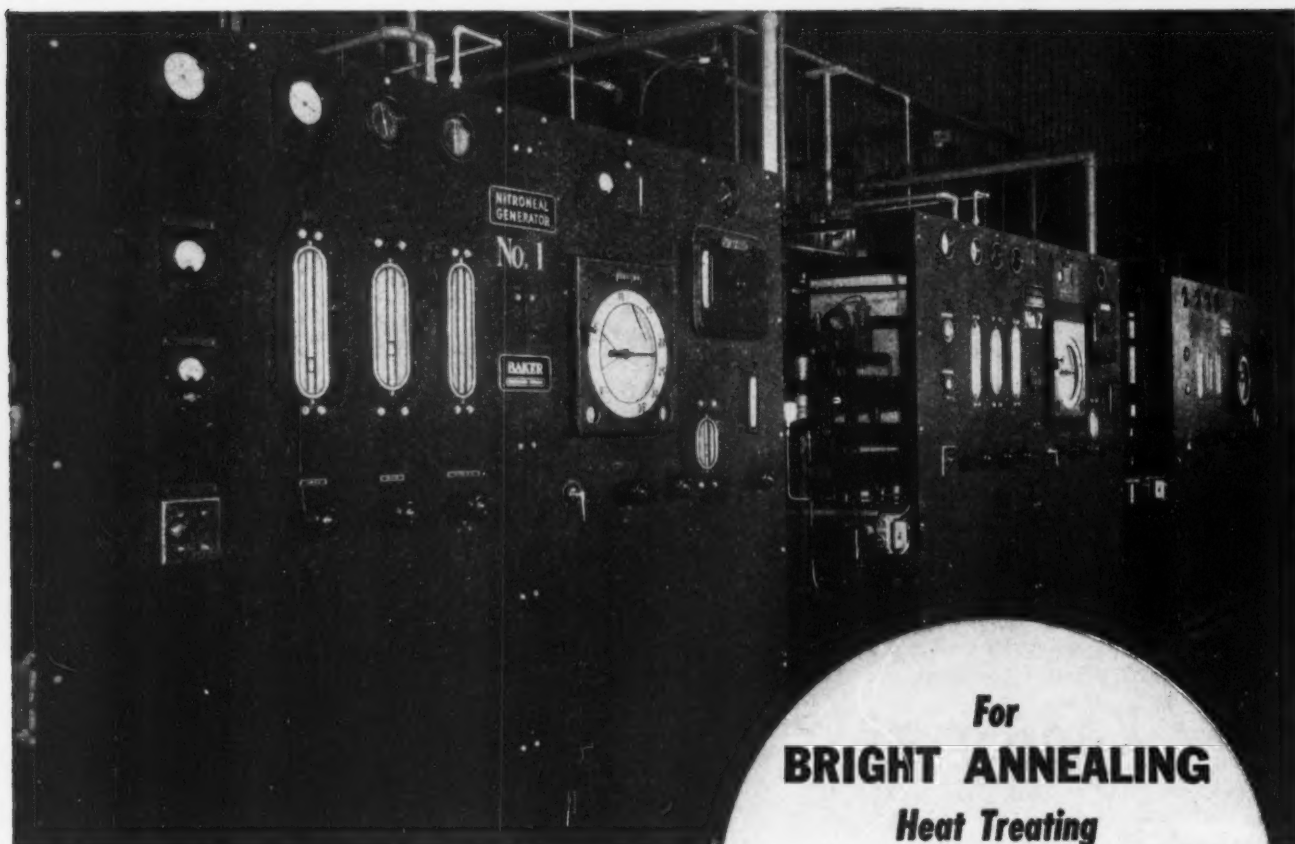
THE COLORADO FUEL AND IRON CORPORATION • Denver, Colorado  
 THE CALIFORNIA WIRE CLOTH CORPORATION • Oakland, California  
 WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo • Chicago • Detroit • New York • Philadelphia

## CLAYMONT STEEL PRODUCTS

PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION  
 THE COLORADO FUEL AND IRON CORPORATION



# NITRONEAL GAS



Typical Steel Mill Application of Three Model 3000-G Nitroneal Generators

**SEE UNIT ON DISPLAY AT METAL  
SHOW PHILADELPHIA, OCT. 20-24**

## NITRONEAL GENERATORS

*Available in 100 C.F.H. to 10,000 C.F.H. Capacities*

Fundamentally new ammonia-air reactor produces pure nitrogen with a controllable hydrogen content that can be varied at will and maintained at any percentage from .25% to 30% as required.

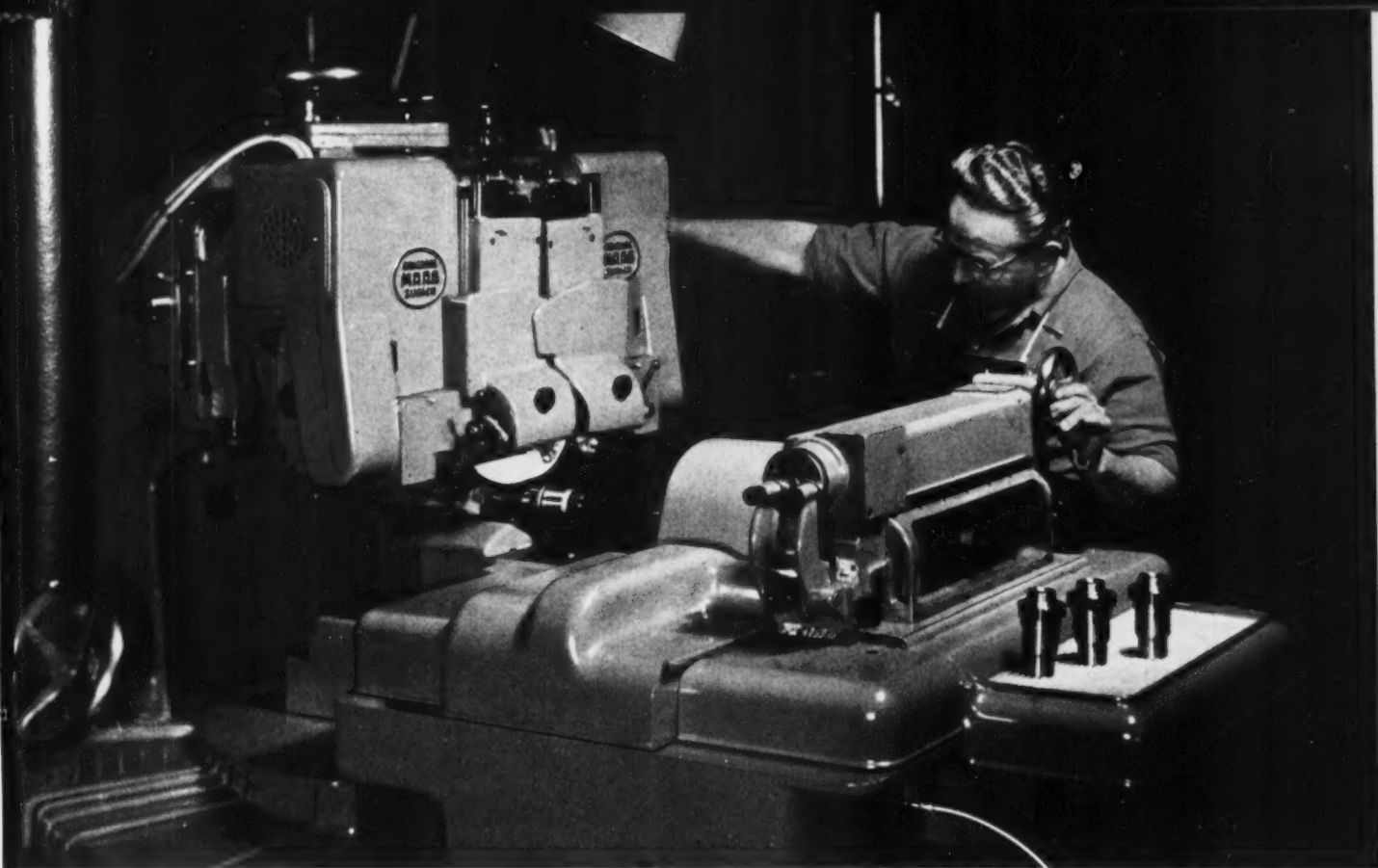
- FULLY AUTOMATIC
- NO OPERATING PERSONNEL REQUIRED
- NO EXPLOSION HAZARD
- 30% LESS COSTLY THAN DISSOCIATED AMMONIA

*GAS RATIOS PER 1000 CUBIC FEET OF FINISHED NITRONEAL GAS*

% HYDROGEN	.25	1.0	3.0	6.0	20.0	25.0	30.0
AMMONIA (c.f.)	301	304	309.3	316.7	350	370	386
AIR (c.f.)	1070	1064	1033	990	790	715	640

*Baker & Co., Inc.* 113 ASTOR ST., NEWARK 5, N. J.





## How to slow down the fastest aircraft engine ever made!

Though the jet engine's record-breaking speed is an asset in a fighter plane, it's a handicap in driving many vital accessories of a plane.

Hydraulic pumps, generators, radar equipment can't be driven directly from a shaft that turns 16,000-38,000 rpm. To reduce the shaft speed to 2,000 rpm without cutting the engine speed, proved a tricky problem.

Barium's Jacobs Aircraft Engine Co., Pottstown, Pa., solved it by grinding spe-

cial gear transmissions to precision tolerances on Swiss gear grinders.

Jacobs gear specialists can do as well for you. Other members of Barium Steel Corporation can supply your other steel needs. This group of strategically located companies controls quality from blast furnace to end product, works as a self-contained unit to speed urgently needed orders.

Address inquiries to Barium, 25 Broad Street, New York City.



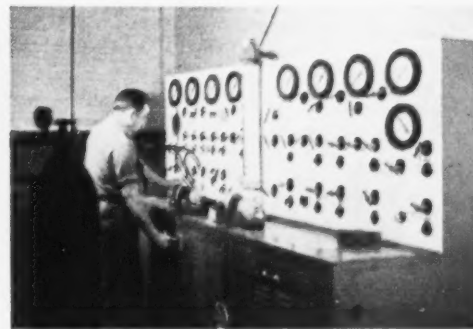
BAYONNE BOLT CORP. • CENTRAL IRON AND STEEL COMPANY • CHESTER BLAST FURNACE • CLYDE IRON WORKS, INC. • CUYAHOGA SPRING COMPANY • ERIE BOLT AND NUT COMPANY • GEOMETRIC STAMPING CO. • GLOBE FORGE, INCORPORATED • INDUSTRIAL FORGE & STEEL, INC. • JACOBS AIRCRAFT ENGINE CO. • KERMATH MANUFACTURING CO. • KERMATH LIMITED (CANADA) • PHOENIX BRIDGE CO. • PHOENIX IRON & STEEL CO. • WILEY MANUFACTURING CO.



This inspector tests Jacobs gears for accuracy in a controlled temperature area. Tolerances to .0001 in. are needed to meet high load requirements on many parts such as those for aircraft gears.



This worker's skilled handling of the latest grinding equipment helps maintain Barium's Jacobs Aircraft Engine Co.'s leadership in spur and helical gears, from tiny sizes up to 12 in. diameter.



This board tests hydraulic parts with rapid precision. In addition to auxiliary drives and other jet components, Jacobs makes complete reciprocating aircraft engines and auxiliary power plants.

# ***TROUBLE GOES OUT when HARPER FASTENINGS GO IN***



*3/8-11 x 3" Stainless Steel Cap Screw. One of 7,000 fastening items carried in stock.*

The equipment you manufacture is no better than the fastenings you use. Do these fastenings rust when exposed to weather? Are they affected by salt air? Do acids corrode the threads, rendering fastenings useless?

Everlasting Fastenings by Harper will stop ugly, wasteful corrosion—lengthen the life of equipment—assure better-satisfied customers.

Here at Harper, world's largest exclusive producer of non-ferrous and stainless steel fastenings, you will find a vast background of metallurgical and engineering knowledge to help you choose the correct fastening to solve any corrosion problem.

Here at Harper are 7,000 different items in stock, ready to bring you these advantages—one source of supply—one order to write—one account to keep—one bill to pay.

There is a Harper distributor in every market area. One is located near you. Back of them is nearly a third of a century of experience in solving fastening problems where corrosion, strength, speed of assembly, and product appearance are important factors. Call your Harper salesman or write the Harper engineer.

**THE H. M. HARPER COMPANY**  
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**EVERLASTING FASTENINGS**

**SPECIALISTS IN ALL  
NON-CORROSIVE METALS**

**BRASS • SILICON BRONZE • NAVAL BRONZE • MONEL • ALUMINUM • STAINLESS STEEL**

# *The* **Iron Age**

## **SALUTES**

*Carleton B. Tibbetts*

This successful businessman is one of the most active citizens in the third largest U. S. city.



**G**REAT cities don't just happen. Los Angeles is no exception. In the spectacular growth of the nation's third largest city there are hundreds of solid citizens whose civic-mindedness, judgment and enthusiasm have been major factors behind the sky-rocketing business graphs.

Right up at the top of the list is "Tib" Tibbetts, president of Los Angeles Steel Casting Co. And the community appreciates his more than quarter century of distinguished service. In 1942, for example, the Los Angeles Realty Board chose Tib as "Los Angeles' Most Useful Citizen."

Born in Berwick, Me., and educated in New Hampshire, Tib moved from Chicago to his "native" Los Angeles in 1923. He's been with Los Angeles Steel Casting ever since—16 years as president and 7 before that as vice-president and general manager.

He's been president of the Los Angeles Chamber of Commerce and the Metal Trades Manufacturers Assn.; vice-president of the Merchants & Manufacturers Assn. and a member of the National Labor Relations Board, Area War Manpower Committee, Libanus Lodge No. 49, F.A.M., and California and Rotary Clubs, and commander, San Marino Post, American Legion. He's also found time to serve 3 years as mayor of San Marino, Calif., and another 7 years as councilman for the same community.

With a sharp but subtle sense of humor, Tib just likes to work—preferably in his shirt sleeves. But when he can he indulges his favorite hobbies of fishing, camping and outdoor sports.



ASK

# BAIRD

ABOUT IT!

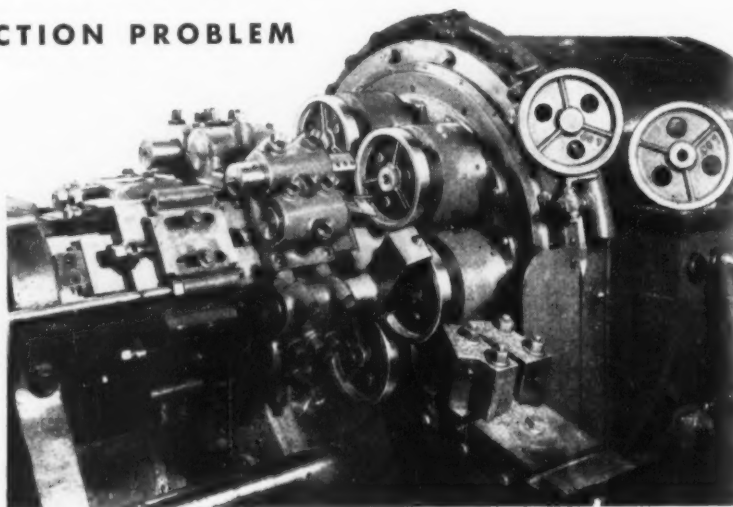
## HIGH PRODUCTION TOOLING

TYPICAL OF THE **EXTRA VALUES** YOU GET  
WHEN YOU BRING A PRODUCTION PROBLEM  
TO **BAIRD . . .**

Year-in and year-out, in many automobile and other headlined production plants, Baird's No. 76-H Automatic Chucking Machine has proved itself to be one of the best production units of its kind. It's easy to operate and service; has unusual versatility in tooling, operations, speeds; and it cuts costs with quality control.

But the pay-off comes when Baird engineers adapt this 6-spindle unit to your specific tooling and production requirements.

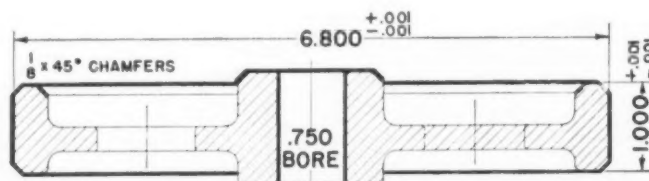
For example, gear blanks (drawing below) are turned completely in one operation as shown. Material: High tension iron-hardness



**BAIRD No. 76H AUTOMATIC CHUCKING MACHINE**

85-90 Rockwell B scale. Production: 65 seconds each, 55 pieces per hour.

Of course we're busy. But not too busy to try and solve a problem for a new or old customer. Ask Baird about it!



*the* **BAIRD MACHINE COMPANY**  
STRATFORD • CONNECTICUT

**AUTOMATIC MACHINE TOOLS • AUTOMATIC WIRE & RIBBON METAL FORMING  
MACHINES • AUTOMATIC PRESSES • TUMBLING BARRELS**

3BA52

# The Iron Age

## INTRODUCES

**E. C. Berg**, appointed vice-president and controller, **MACWHYTE CO.**, Kenosha, Wis.; and **G. Johnston**, named treasurer and assistant secretary.

**Frank A. Gorman**, elected a vice-president, **EASTERN STAINLESS STEEL CORP.**, Baltimore.

**L. F. Reimann**, promoted to assistant vice-president of manufacturing, **JACKSON & CHURCH CO.**, Saginaw, Mich.

**Robert B. Dean**, made chief analytical chemist, resin plant, Bainbridge, N. Y., **BORDEN CO.**

**John Davies**, promoted to the position of assistant chief engineer, **EATON MFG. CO.**, Axle Div., Cleveland; and **Chester D. Christie**, becomes staff engineer.

**Donald M. Covert**, named office manager, **THE ALLIED METALS CO.**, Niles, Ohio.

**Theodore B. Smith**, appointed budget director, **CHRYSLER CORP.**, Detroit. He succeeds **Duncan A. Samson**, who has retired.

**Henry W. Willard**, appointed factory manager, Passaic, N. J. plant, **UNITED STATES RUBBER CO.**; and **Purdy Miller**, made manager of molded goods sales.

**Jack Hensel**, named supervisor of analytical research, **PITTSBURGH COKE & CHEMICAL CO.**; **William R. Davie** and **Arthur M. Gladstone**, appointed assistant supervisors of agricultural chemical research.

**George Seagstacken**, appointed works manager, **CHASE METAL WORKS**, Waterbury, Conn.; **F. G. Parke**, named general superintendent.

**James E. Hays**, promoted to group engineer for structures, **Flightronic Flight Simulator Div.**, **ENGINEERING & RESEARCH CORP.**, Riverdale, Maryland.

**J. Miller Brown**, appointed export manager, **PIONEER ENGINEERING WORKS**, Minneapolis.

**Wayne H. Hunter**, named assistant sales development manager, **Republic Rubber Div.**, **LEE RUBBER & TIRE CORP.**, Youngstown.

**Wayne H. Keller**, appointed director, Chemistry Dept., **NATIONAL RESEARCH CORP.**, Cambridge.

**Beresford N. Clarke**, becomes sales engineer, New England territory, **SURFACE COMBUSTION CORP.**

**David S. Hodgson**, named district sales manager, New York area, **THE PRODUCTO MACHINE CO.**

**John J. Watson**, appointed manager of foundry sales, **C. O. BARTLETT & SNOW CO.**, Cleveland.

**Jack Canady**, promoted to sales manager, **Palmer Mfg. Corp.**, Phoenix, a subsidiary of **McCray Refrigerator Co., Inc.**

**George W. Pattlow**, appointed supervisor of general accounting, U. S. Steel Supply Div., **U. S. STEEL CO.**, and **Gordon F. Johns**, named priorities administrator.

**G. W. Huldum, Jr.**, appointed sales manager, Eastern Div., **SHELL CHEMICAL CORP.**, New York; and **V. C. Irvine**, named manager, Western Div.

**William A. Hopkins**, named general sales manager, **BART-MESSING CORP.**, Belleville, N. J.



**FRANCIS O. CASE**, elected president, newly-formed **Anaconda Aluminum Co.**, Columbia Falls, Mont.



**WALTER L. SMITH**, made vice-president in charge of operations and director, **Chase Brass & Copper Co., Inc.**, Waterbury, Conn.



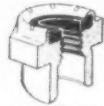
**LESLIE G. JENNESS**, named vice-president in charge of research, **Kennecott Copper Corp.**, New York.



## ... or Released in an Instant



CLINCH TYPE



INSTRUMENT MOUNTING



SPLINE TYPE



THIN TYPE



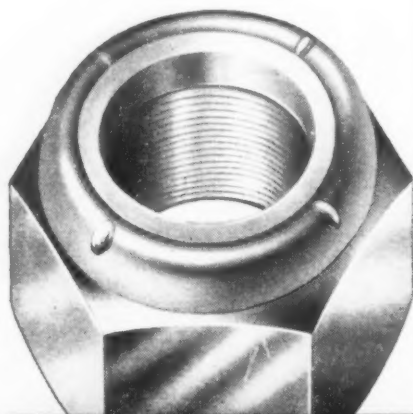
STANDARD

Faster assembly . . . no more failures of fasteners. GREER STOP NUTS hold firm against jolts, shocks, shimmy, wobbles . . . any vibration, any kind.

Bolt threads are gripped tightly . . . these famous nuts *never* work loose. Yet an ordinary hand wrench gives instant release. The tough, built-in GREERCOID collar does it . . . and seals against fluid leakage, too!

Study *your* fastener problem. Over 3000 types and sizes. Consult GREER. Proved on thousands of products. Meets gov't and military specifications.

Write  
**GREER STOP NUT CO.**  
2620 Flournoy, Chicago 12, Ill.



# GREER

## Stop Nuts

## Personnel

*Continued*

Arthur H. Beasley, appointed manager, Memphis, WAGNER ELECTRIC CORP.

Richard S. Stockwell, appointed exclusive sales and service representative, Minneapolis-St. Paul territory, LEWIS-SHEPARD PRODUCTS; and Raymond F. Purinton, made exclusive sales and service representative, Denver territory.

Lenvik Ylvisaker, becomes general manager, northeastern district, Eastern Metal Div., CONTINENTAL CAN CO.; and Wilbur K. Neuman, made general manager, southeastern district.

E. R. Koester, named manager, manufacturing, X-Ray Dept., GENERAL ELECTRIC CO.

Ernest E. Bang, appointed advertising manager, Berger Mfg. Div., REPUBLIC STEEL CORP., and Oscar A. Bamberger, named assistant district manager, Massillon and Canton.

W. M. Kreglow, appointed blast furnace superintendent, Johnstown, Pa. plant, BETHLEHEM STEEL CO.; and C. M. Nitchie made assistant blast furnace superintendent, Sparrows Pt. plant.

R. L. Bernhard, named manager, newly-created Centrifugal Compressor Dept., AMERICAN BLOWER CORP., Detroit.

William V. Cigliano, named assistant general manager, RUSSELL, BURDSALL & WARD BOLT AND NUT CO.; Price Berrien, appointed plant manager, Los Angeles; and John B. Gates, made treasurer and assistant secretary.

C. J. Masepohl, promoted to the position of works-manager, CALUMET STEEL CASTINGS CORP., Hammond, Ind.

Charles E. Barby, named sales manager, Detroit district, PITTSBURGH PLATE GLASS CO., Fiber Glass Div.

David B. Tyler, appointed advertising manager, NORTON BEHR-MANNING OVERSEAS INC., Worcester.

Stephen Sesnick, appointed industrial sales representative, New Jersey and lower New York area, LOWE BROS. CO., Dayton.



GEORGE S. FABEL, elected president, Thermoid Co., Trenton, N. J.



ALVIN A. MEYROWITZ, becomes vice-president and general manager, H. Kramer & Co.



C. B. McGEHEE, made vice-president, Truscon Steel Co., Youngstown.



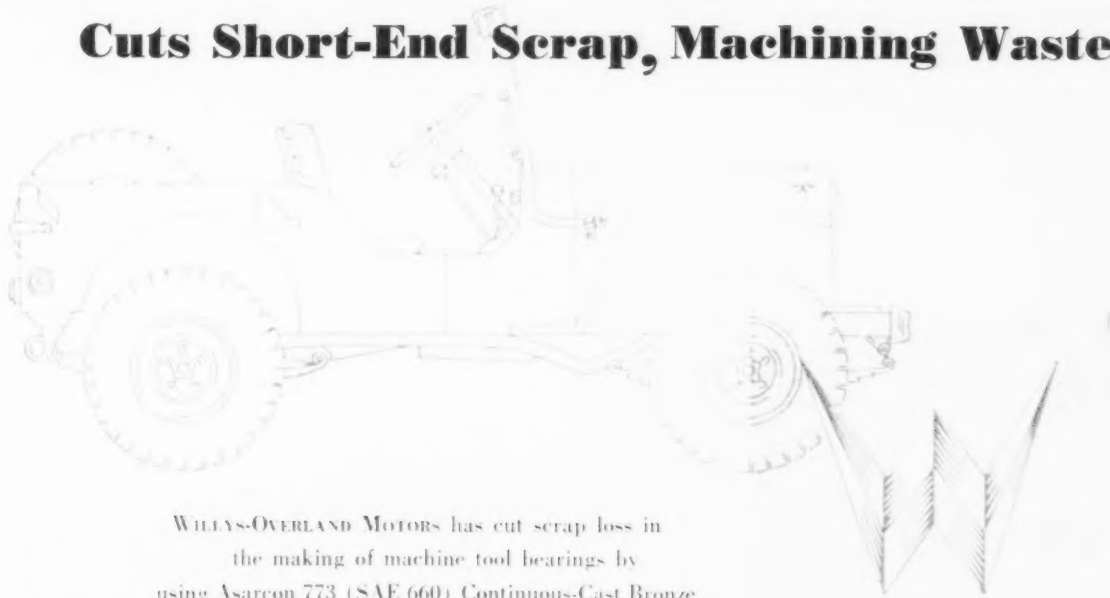
ANDREW GAGARIN, appointed president, Torrington Mfg. Co., Torrington, Conn.



## Customer Reports:

### 105" Asarcon 773 Bearing Bronze

### Cuts Short-End Scrap, Machining Waste



WILLIAMS-OVERLAND MOTORS has cut scrap loss in the making of machine tool bearings by using Asarcon 773 (SAE 660) Continuous-Cast Bronze.

Pieces are cut to the exact length needed from 105" stock supplied by Meier Brass & Copper Company, Detroit (distributors); there is only one short end from an entire 105" tube, an economy impossible with ordinary 13" stock.

Also, unique dimensional accuracy and uniformity reduce metal losses in finishing.

Asarcon 773 bearing bronze is continuous-cast in diameters  $\frac{1}{2}$ " to  $5\frac{1}{8}$ ", cored or solid. It contains no hard or soft spots; no blowholes or porosity of any type.

Since sand is not used in the process, and dirt and dross are excluded, there is no surface- or internally-trapped abrasive to dull tools or discourage high cutting speeds.

Fatigue characteristics are up to 100% higher than those of the same alloys produced by other casting methods; tensile strength, yield strength and hardness are appreciably improved, too.

Distributors across the country have in stock 216 sizes of Asarcon 773 rods, tubes and shapes. They will cut it long or short to suit your requirements.

A variety of alloys, longer lengths and special shapes can be cast to order. Write for free catalog containing complete descriptive material.



West Coast Sales Agent:  
KINGWELL BROS. LTD., 444 Natoma Street, San Francisco, Calif.  
**American Smelting and Refining Company**  
OFFICES: Perth Amboy Plant, Barber, New Jersey  
Whiting, Indiana



## Quiet... Clean... Safe

**B**ecause they are quiet, clean and safe, battery industrial trucks can be used without restriction in virtually any department of the plant or warehouse including confined quarters as well as areas devoted to processing foods, pharmaceuticals and other products demanding utmost cleanliness. They can even be provided with spark-enclosed construction for operation in hazardous locations.

They use low-cost electric power for battery charging; and they use it with maximum economy, because they start instantly, yet consume no power during stops. With electric-motor drives and EDISON Nickel-Iron-Alkaline Storage Batteries, they have a minimum of wearing parts; are easy to maintain, are rarely out of service for repairs. With batteries exchanged at convenient intervals, they operate around the clock with the highest dependability and lowest overall operating costs.

EDISON batteries have these important features:

They are durable mechanically; grids, containers and other structural parts of the cells are of steel; the alka-

line electrolyte is a preservative of steel.

They can be charged rapidly; gassing cannot dislodge the active materials.

They withstand temperature extremes; are free from freezing hazard; are easily ventilated for rapid cooling.

They are foolproof electrically; are not injured by short-circuiting, reverse charging or similar accidents.

They can stand idle indefinitely without injury. Merely discharge, short-circuit, and store in a clean, dry place.

They are simple and easy to maintain.

As a result of these features, they are the longest-lived of all storage batteries. In fact, they have such long life that they effect important economies in depreciation charges. And they are so trouble-free that they cut maintenance charges too. Send for bulletin *Modern Material Handling* for further details of the advantages of electric-motor drives and EDISON batteries. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. Thomas A. Edison of Canada, Limited, Montreal.

*You can always rely on*



# EDISON

Nickel-Iron-Alkaline Storage Batteries

## Personnel

*Continued*

**Robert H. Fox**, appointed sales director, Crane & Shovel Equipt. Div., COOK BROS. EQUIPMENT CO., Los Angeles.

**A. S. Blodget, Jr.**, appointed manager, Pittsburgh district, AIR REDUCTION SALES CO., **E. S. Twining, Jr.**, becomes manager, Boston district.

**Reed A. Weyburn**, appointed representative-distributor of sales, FLEXIBLE TUBING CORP., Guilford, Conn.

**Maurice H. McGuire**, joins sales staff, HYDRO-AIRE, INC., Burbank, Calif.

**Michael F. Wiedl, Jr.**, joins staff of Advertising Dept., ATLANTA STEEL CO., Atlanta.

**William G. Cole**, appointed sales representative, BOHN ALUMINUM & BRASS CORP., Chicago office.

**William B. Guffey**, named traffic manager, UNITED ENGINEERING & FOUNDRY CO., Pittsburgh. He succeeds Leonard G. Hults, who is retiring.

**M. B. Beline**, appointed to newly created post of director of national accounts, Quaker Rubber Corp., a division of H. K. PORTER CO., INC., Philadelphia.

**George W. Roper**, promoted to assistant technical director, Dust and Fume Control Div., AMERICAN WHEELABRATOR & EQUIPMENT CORP., Mishawaka, Ind.

## OBITUARIES

**Thomas Walker Page**, 45, mining engineer, Armco Steel Corp.

**Edward E. Ames**, 71, retired chairman of the board, director, vice-president and director of sales, General Box Co.

**John A. Moritz**, 62, superintendent of wire mills, Keystone Steel & Wire Co., at his home.

**Thomas D. Potts**, 56, executive vice-president, Adirondack Foundries & Steel, Inc., Watervliet, N. Y.

**Charles Dreifus**, 81, retired president, Charles Dreifus Co.

**Edward Lawrence Greene**, 68, president, National Better Business Bureau, at his home in Mamaroneck, N. Y.



*Unique*

VASCO

SUPREME

U. S. PATENT NO. 2174285

... will do work that **NO OTHER**  
High Speed Steel will do ...

... does most of the jobs done by  
other High Speed Steels ... **5 OR MORE TIMES BETTER!**

There's only one Vasco SUPREME ... unapproachable for high production performance; cuts harder materials and can be used at speeds 15 to 100% higher than other high speed steels. Hardened and ground flat tool bits now available from stock. Do you have the remarkable facts on this High Speed Steel?



**Vanadium-Alloys**

STEEL COMPANY

LATROBE, PA.

COLONIAL STEEL DIVISION • ANCHOR DRAWN STEEL CO.



**selecting**

**the exact steel**



**is almost**

**this easy!**

The age of push-button steelmaking has not yet arrived. But many a steel buyer has learned that a buzz to his secretary is the first step in making contact with a team of steel experts who can put their special knowledge and skills to work making the *right* steel to do the job. We have this team at Inland.



**INLAND STEEL COMPANY**

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SALES OFFICES: Chicago • Milwaukee • St. Paul • Davenport  
Kansas City • St. Louis • Indianapolis • Detroit • New York

# Armor Plate Quenched Rapidly, Uniformly in Hydraulic Press



By G. A. Leytze  
Vice President  
The Williamson Heater Co.  
Cincinnati

Plates ranging in thickness from  $\frac{1}{4}$  to 3 in. are quenched in a 2500-ton HPM Fastraverse hydraulic press. Dies are designed to achieve a rapid and uniform quench over the entire surface area of the plate. Press can handle plates up to 70 x 200 in. Unit is located between hardening and draw furnaces with handling done on roller conveyers. Total pressure applied can be varied to suit different sizes and thicknesses. Most plates are kept flat but some are formed before quenching.

Before homogeneous armor plate coming from steel mills is ready for use in tanks and for other applications, it must be heat treated. In most cases, the plates must remain flat. To assure the required degree of flatness, quenching must be done in a press provided with suitable dies. Otherwise, warpage is likely to occur.

In some instances plates must be formed while hot, just before quenching. In this case also, quenching must be done while the blank is still gripped in the die. Unless confined under heavy pressure, distortion is likely and deviation from the required shape may result. For these reasons, specialized heat-treating and quenching setups are required.

The accompanying photographs showing these specialized heat-treating and quenching operations, were taken in plants of two of the 19 sub-contractors of the Standard Steel Spring Co.

Williamson produces today approximately 60

different shapes of homogeneous armor plate for tanks. Many are flat pieces, but some of the largest are formed. Most are of irregular outline with cutouts and drilled holes.

In addition to the fabricating facilities which are comparable to those operated by Williamson in World War II, a new continuous heat-treating line has been added which is one of the most advanced in operation anywhere.

Raw material reaches the south end of the plant by rail spur and is handled to ground storage and thence into the plant by a bridge crane which spans the track, the apron and the shipping dock.

Plate from the mill is rough cut to shape on Radiograph flame cutters, then loaded onto a roller charger. This starts it through the heat treat line which occupies the entire length of a 400-ft wall of the building.

The pieces first enter a Drever roller hearth hardening furnace. This unit is normally gas fired, but it is equipped with combination burners which will also handle oil. It is fired from both sides in combustion tunnels under a silicon carbide tile hearth, venting through the arch. The burners are grouped in six zones, each of which is furnished with a proportioning type pyrometer controller.

Transit through the furnace is controlled by varying the speed of the rolls on the hearth. In the event of power failure, furnace rolls can be turned manually so that plates can be moved out to prevent possible overheating.

At the end of the heating period, a pulpit operator actuates the final 12 accelerating rolls of

**"Plates are kept in constant motion until the proper draw time has elapsed . . ."**

the furnace to eject the part on a high-speed elevating and positioning runout section which delivers it to the in-line quenching and forming press. Speedup is so plate will not cool below quench temperature before it gets into the press.

The press is a 2500-ton HPM Fastraverse hydraulic press. It is provided with dies designed to effect rapid and uniform quenching over the entire area of the plates processed. This press can accommodate plates as large as 70 x 200 in. Forming of large heated blanks is also done in this press but smaller size parts are handled in a smaller hydraulic press, using dies of similar type.

Plates ranging in thickness from  $\frac{1}{4}$  to 3 in. are quenched in the large press. To facilitate and to expedite handling the top face of the lower die is slightly below the level of the roller hearth of the hardening furnace.

Parting faces of both halves of quenching dies, whether flat or shaped for forming, are serrated with shallow channels. These divide the faces into checkerboard patterns. At the center of each checker or square a hole is drilled at right angles to the face. Each hole runs through the die wall and enters an interior channel filled with water under pressure when the die closes. From each hole a short channel extends to each side of the square where it joins a primary serration.

The part in place in the dies, the operator closes the press and starts the water pumps. As soon as the piece is clamped at full pressure, he opens the valves to supply water to the dies. Entering the dies through manifolds of piping and flexible hoses, the quench water simultaneously

sprays both sides of the piece. Water from the dies flows off through grill flooring surrounding the press to a hot well for recirculation.

Formed pieces receive their complete shaping in the press and flat pieces are also pressed in waffle-faced plates for holding maximum flatness during quenching.

The tempering furnace is also a Drever roller hearth unit of the forced air circulation type. Heat is supplied by air mixed with hot gasses generated by external air heaters and delivered through ducts to plenum chambers within the furnace. After being distributed uniformly to the working area, the mixture passes through collector ducts in the hearth back to the air heaters for reheating. Multiple-zone temperature control is effected.

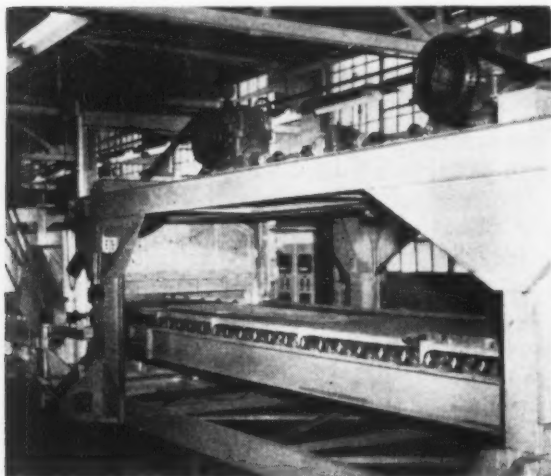
#### **Parts move on power rollers**

All rolls forming the draw furnace hearths are power driven. As a plate nears one end of the hearth, the rolls are automatically reversed to turn in the opposite direction and cause plate motion to reverse. Thus, plates are kept in constant motion, back and forth on hearth, until the proper draw time has elapsed.

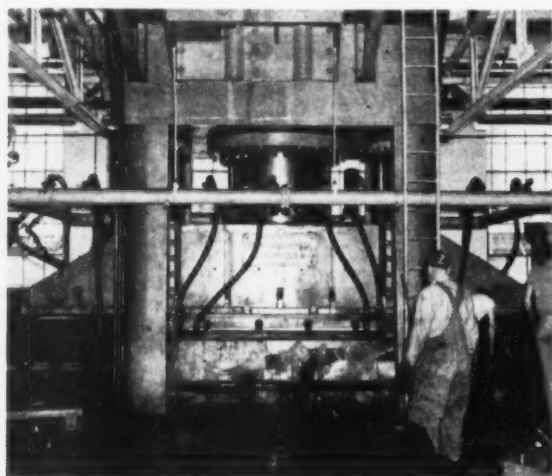
From the draw furnace, parts move on power rollers directly to the temper quench, where again they are sprayed with large quantities of cooling water. A light hydraulic pressure system is built into this unit with waffle platens for pressure quenching.

Traveling out onto the open discharge table at the end of the heat treating line, parts are individually tested for hardness. A tester mounted over the roller bed makes the necessary impression. Each ball depression is then measured by a micrometer microscope.

Having then arrived at the end of the shop area, parts are handled by Monorail crane onto loading cars for shot blasting in a Pangborn unit, and are ready for fabricating trip back



EMERGING from hardening furnace, armor plate moves on power-driven rolls of positioning and runout table to adjacent form-quench press which prevents quench distortion.



WITH DIES closed, water in form-quench press is turned on. Water travels through holes in dies, is distributed through checkered surface of dies to quench plate evenly.



to the shipping-receiving dock.

First fabricating step is flame cutting to finished shape, including cutouts of various forms. Eight Radiagraphs are available for straight-line cutting, which includes bevels. Larger units, a Travograph and an Oxygraph, are used for automatic shape cutting, under electric eye or magnetic head control.

After being cut to shape, parts pass on to grinding. Torch-cut edges are finished, and bevels are ground. Two reciprocating-head grinders with tracks are used, and three grinders with reciprocating beds. Another machine of the latter type, with a segmented wheel, is used to stack grind a number of parts at one loading. Contoured and cutout edges are finished by hand grinders.

Virtually all work is straightened, usually after grinding. Flame cutting operations produce distortions affecting flatness. And some corrections also need to be made due to heat treating, though the use of pressure during quenching holds this warpage to a minimum.

Flattening or straightening is handled in press brakes. These are equipped with V-block dies and ball transfer heads. Large parts are placed

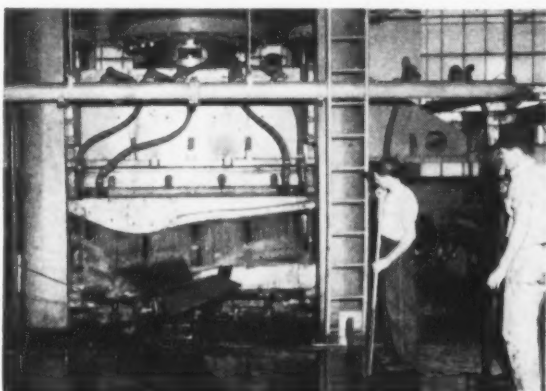
in the presses by fork lift trucks, while smaller pieces are handled by Monorail hoist.

Next step after straightening is drilling. Up to 30 holes are required on some parts, most countersunk and counterbored, while many are tapped. Three radial drills and one upright unit are used. Drills are high speed steel, though some carbide tools are used in counterboring.

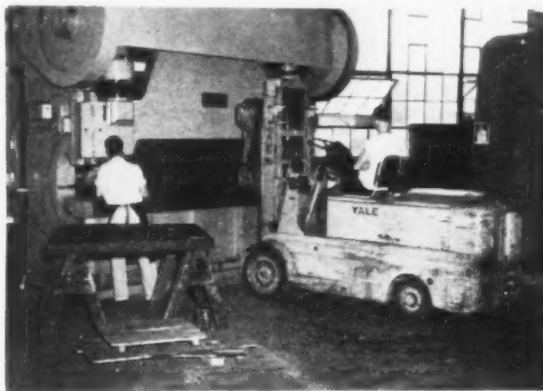
Metallurgical inspection is completed with impact testing of Charpy specimens taken from heat treated plates. The original heat identification of all armor plate is preserved through all processing.

A large capacity system using recirculated city water supplies the quantities of quench water needed. Draining from the presses into a hot well, the quench water is routed to a cooling tower by two return pumps at the well. After cooling, tower water is ready for reuse.

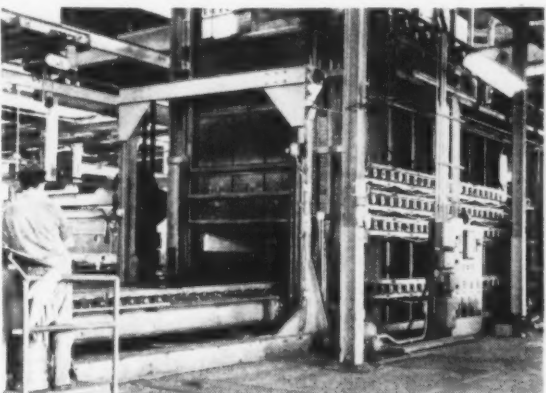
Williamson installed its armor plate facilities in a building which had been 40 pct devoted to offices and 60 pct to warehousing. The Trundle Engineering Co. surveyed Williamson's facilities, finding room in existing buildings for the warehouse needs, and recommending a new building for the offices.



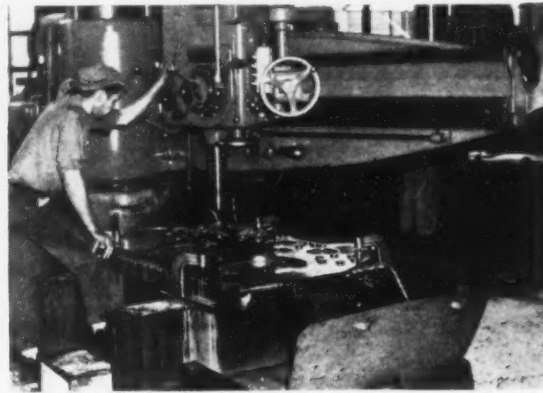
FORMED AND QUENCHED armor plate in the die and ready for removal to the draw furnace. Residual streams of water can be seen draining from holes in upper die.



STRAIGHTENING of armor, when necessary, is done in press brake with ball transfer heads and pinch dies. Fork truck moves heavy pieces of plate for this operation.



FOUR-TIER furnace, similar to that used at Williamson, tempers plate after hardening. Power driven roll conveyor from press can be lifted to level of any tier.



FINAL OPERATION is drilling, counterboring, countersinking, and tapping of holes, done in one of three radial drills or in an upright drilling machine.

# High speed screw slotter

## CUTS SEVERAL HEADS

By John A. Largay  
Connecticut Screw & Rivet Co., Inc.  
Waterbury, Conn.

Machine is used on all standard sizes and head shapes. Speed twenty times greater than conventional slotters has been achieved. Round head screws require no deburring. Saws have considerably longer life per grind than those on conventional equipment. Reduction of slotting costs has been estimated at 50 pct. Equipment is primarily intended for long production runs.

A new type of machine, capable of slotting more than 2200 screws per minute, has been in successful use for several months at Connecticut Screw & Rivet Co., Waterbury, Conn.

Since February, the machine has been used on all standard sizes and head shapes from a six-line on up through a  $\frac{1}{4}$ -20 machine screw. Production has been as high as 2375 blanks per minute on eight-line brass machine screws and 990 per minute on  $\frac{1}{4}$ -20 round head steel machine screws.

The machine was developed by Waterbury-Farrel Foundry & Machine Co. from designs by Victor Fray of New Zealand. Its unusual speed, as much as 20 times greater than conventional slotters, is mostly due to the greater utilization of the saw, which cuts in more than one screw head at a time.

In operation, blanks are poured into a bowl opening at the front of the machine. From this they drop into a revolving drum, with vanes which lift the blanks up to a wide delivery chute.

The chute drops blanks onto rapidly-revolving rolls which position them and feed them into the conveyer section. The excess spills over the rolls and drops back into the hopper.

At the end of the feed rolls is a clearing mechanism which kicks out improperly-positioned blanks. The rest, head up, are conveyed between

guides by a thin endless steel belt toward the feed-in dial.

This notched wheel received blanks from the conveyer belt and presents them in timed relation to the carrying dial. This dial picks up the blanks with their heads projecting inward and their shanks positioned radially outward. Blanks are clamped into dial notches by a pressure plate. Heads are further controlled by a head ring to hold blanks in place.

The 4-in. saw is located inside the carrying dial, its center of rotation offset from the center of rotation of the dial. The dial turns counter-clockwise, and the saw clockwise. The amount of offset, and the relation between saw diameter and inside diameter of the carrying dial, are such that the saw is cutting in several heads at all times.

A stationary cutter near the point where blanks leave the dial removes burrs on blanks with flat or fillister heads. Other types, such as round heads, require no deburring.

As originally planned, the machine was expected to slot about 1200 screws a minute, maximum. But during testing in Waterbury-Farrel's plant, in which Connecticut Screw & Rivet supplied the blanks, it was found possible to modify the original design to bring top speed up to at least 2000 blanks per minute.

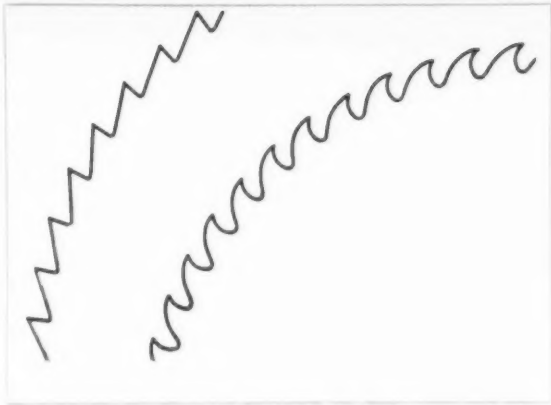


FIG. 2—Saw of brush tooth design, right, is preferred over straight tooth type. Curved or hooked teeth seem to have more cutting and less tearing action on the screw head metal.

Considerable experimenting has been done on types of saws. Saws have considerably longer life per grind than those on conventional equipment. Connecticut Screw & Rivet favors a type of saw, which it has been developing, which has curved, or hooked, teeth, as shown in Fig. 2.

This type of saw seems to have more of a cutting and less of a tearing action on the screw

head metal. Runs of over 100,000 blanks per grind are not unusual with these saws, and as many as 300,000 blanks have been run before a saw needed resharpening.

Operating problems so far have been almost entirely due to deformed blanks. These can cause jams which interrupt production and may cause saw breakage. Since 100-pct inspection of blanks is not practical, more careful blank production is required, and the slotter operator must be alert for deformed blanks. The problem is not serious when careful blank heading is done.

On the machine now in operation at Connecticut Screw & Rivet, changeover from the speed for one screw to the speed for another is made by changing gears. Changeover requires about an hour. Though this is not an excessive length of time, models of the slotter now in production will have an electric variable speed drive so that no change gears will be needed. An experienced operator can change saws in about six minutes.

Naturally, a machine with such a high output as this is primarily intended for long production runs. It will not replace conventional equipment for slotting screws in relatively small quantities. However, on long runs, Connecticut Screw & Rivet estimates slotting costs are reduced to 50 pct of costs of slotting by conventional equipment.

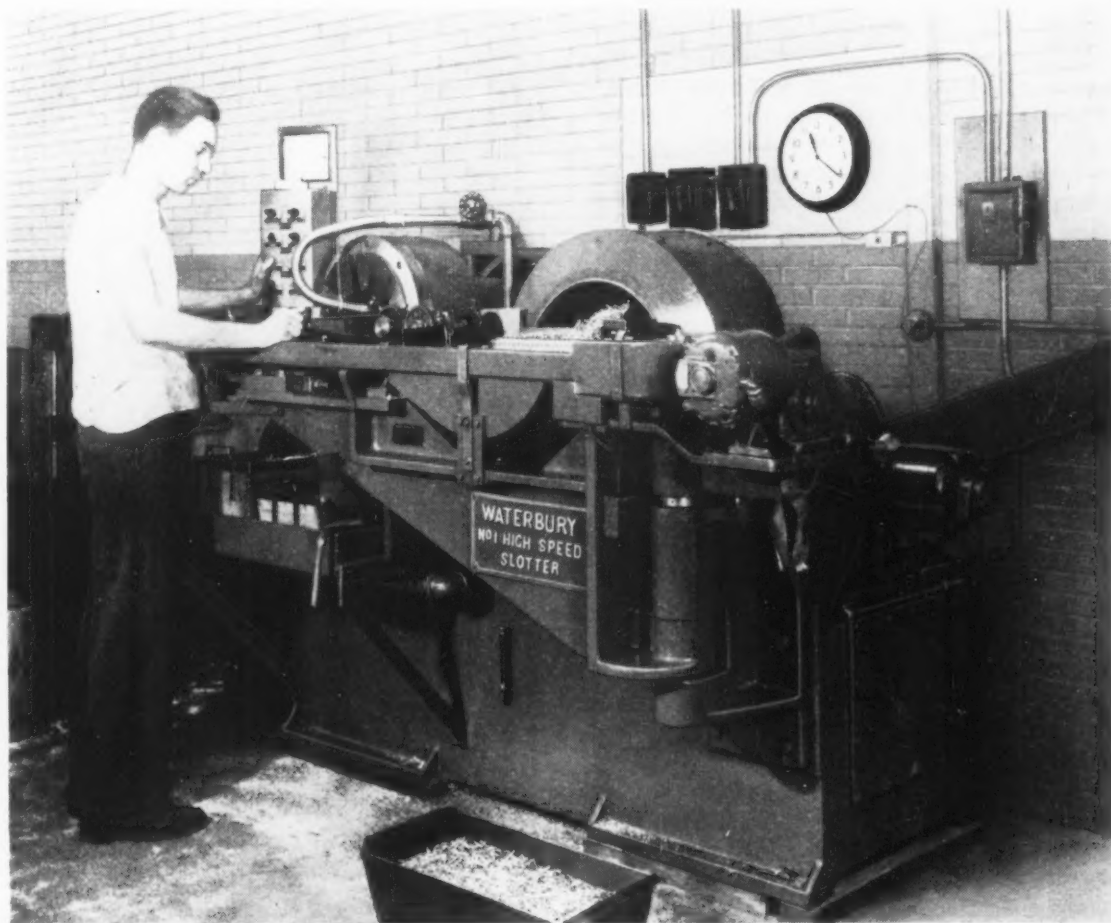


FIG. 1—Waterbury high speed screw slotter in use at plant of Connecticut Screw & Rivet Co., Inc. Speed changeovers for different screws are made by changing gears. Safety guards have been removed in this photo to show more details.



Models catch the eye—



## Seeks Key to More and Better Steels

Steelmaking engineers and executives crowded into Cleveland's big Public Auditorium, where the annual Iron and Steel Exposition was held, with one purpose. That purpose—how to get more and better steels out of the nation's steelmaking machinery—gave the annual convention an underlying, muted note in harmony with the serious problems facing the industry. High interest was shown in Jacques Sejournet's paper on steel extrusion.

**W**ays and means to greater and more efficient production of steel was the central theme of the exposition of the Association of Iron and Steel Engineers held in the Public Auditorium at Cleveland, Sept. 30 to Oct. 3.

Above the noise at the exhibits—and they were reasonably quiet this year—if the visitor looked closely he could see an outline of some interesting trends that are now developing in the steel industry.

This year, for example, materials handling justifiably got a big play. Air conditioning entered the steel-making picture in an important way for the first time in the industry's history. Continuous casting got a lot of deserved attention. The number of electrical exhibits was greater than at any previous show, reflecting the trend toward automatic controls for all phases of steel processing.

If anyone attending the Cleveland Convention was thinking about the late, lamented steel strike, it wasn't evident. All indications pointed to the fact that all the stops in the steel industry are again pulled out for all-out, top quality peak production.

Models—both working and female—got a lot of attention at Cleveland. At the AISE show there were scale models of blooming mills, a continuous billet and slab mill, and other intriguing exhibits. Supplementing the model displays were colored moving pictures showing full-size equipment at

work in the nation's steel mills. Exhibits were both impressive and educational.

Of outstanding interest among the technical papers was the presentation, "The Extrusion of Steel-Equipment, Operation and Production," by Jacques Sejournet, general manager, Comptoir Industriel D'Etirage et Profilage DeMetaux, Paris, France. First press used for studying the



**MATERIALS HANDLING** on a big scale will be required at the new iron ore development at Puerto Ordiz, Venezuela. Link Belt showed a continuous belt conveyer which handles 6000 tons of ore per hr.

extrusion of steel was described as well as a new 1500 ton press now installed at Persan, France. Both existing and future extrusion presses for steel and nonferrous metals were included.

The author emphasized the fact that extrusion presses for a wide range of products will require a number of special features. While low alloy steels can be extruded, he said, at normal pressures for small tonnages, presses for common steels should be specialized if production costs are to be held down.

Preparation of billets, heating practice, piercing, untwisting, straightening and pickling were described. Rolling costs and extrusion costs are compared in the paper.

The new Fairless Works, destined to get a lot of attention in the next year or two, had a prom-



**AIR CONDITIONING** is moving up fast in the steel industry. Shown here is a "quiet, safe, comfortable" operator's pulpit built by James Campbell Smith, Inc. The cabinet is equipped with a television to help the operator follow distant operations. Applications include ingot buggies, rolling mills.



**SCALE MODELS** made it easy for AISE members to visualize an entire operation. Morgan Construction Co. drew attention with its operating model, scale  $\frac{1}{8}$  in. = 1 ft., of reversing blooming mill, 6-stand and 4-stand vertical-horizontal continuous billet and slab mill. Model included transformers, shears, cooling beds.

inent place on this year's AISE program. Carleton Lord, Materials Handling Engineer, presented an interesting paper, "Material Handling Layout of Blast Furnace and Coke Plant at Fairless Works." The author describes the layout and equipment for handling both present and future raw materials.

New foreign ores for Labrador, Venezuela and Liberia and U. S. deposits of low grade Taconite ores are destined to become important new sources of iron, R. P. Bremner, Youngstown Sheet & Tube Co., reminded the AISE. Economic factors favoring open pit ores have increased in recent years, the speaker said, and this is reflected in interest in open pit foreign deposits.

Results to date in the use of No. 1 B domestic oil to replace imported tongue oil used for cold-rolling steel have been "uniformly good." This new lubricant is now being tested in the majority of U. S. and Canadian tinplate mills, according to Robert C. Williams, the Ironsides Co.

A new high temperature alloy capable of operating temperatures up to 2200°F was described by M. N. Ornitz and R. H. English, National

## CONVENTION HIGHLIGHTS

► Latest entrant in the continuous casting race is Koppers Co. Its display, centered about a built-to-scale model of a continuous casting machine, was filled to overflowing most of the week.

► Tapered roll necks were actually removed, replaced and gaged with a new air gage at the Timken Roller Bearing Co. booth. Trained demonstrators kept interest at a high pitch. Also shown were new 4-row tapered bar steel mill roll neck bearings.

► A newly developed powered hydraulic crane bridge brake system shown by Wagner Electric

Corp., started a lot of conversation at the show.

► Cast refractories are getting a lot of attention. Steelmen are watching this development closely. Shorter downtimes and lower furnace repair costs are promised.

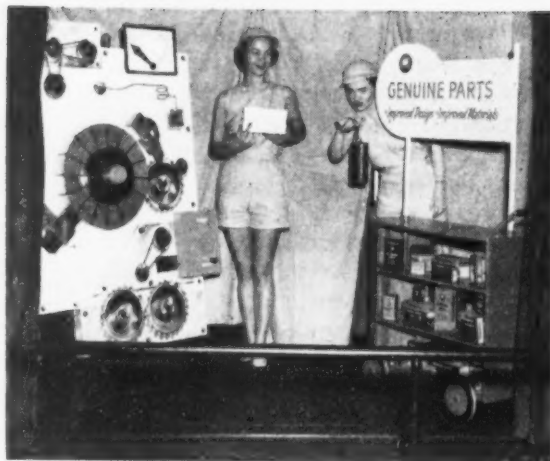
► Use of colored photographs, transparencies, black and white enlargements to effectively tell convention visitors the company story, is growing. Colored transparencies and black and white enlargements used by McDowell Co., Inc., told an impressive story of outstanding accomplishments in construction and engineering.

**"New combustion controls, quench and tempered casing and cast refractories of high interest . . ."**

Alloy Steel Div., Blaw Knox Co. Designated as NA22H, the new alloy has good resistance to oxidation and unusually high strength.

Other speakers described the growing use of chromium plating by iron and steel mills to reduce maintenance costs, oxygen control in the openhearth, new combustion controls, quench and tempered oil well casing, cast refractories, radiation gages, mechanized hot scarfing and other subjects of current interest.

AISE members elected John L. Young, vice president, engineering, United States Steel Co., president for 1953. Other new officers include: James D. O'Roark, Weirton Steel Co., secretary; W. H. Collison, Great Lakes Steel Corp., treasurer; E. L. Anderson, Bethlehem Steel Co., first



EASY-ON-THE-EYES models told the Westinghouse Service and Maintenance story in pantomime. The story of Westinghouse renewal parts was presented at a 3-stage miniature theater. The crowds loved it.

vice president; John H. Vohr, Gary Works, United States Steel Co., second vice president.



NEW OFFICERS OF AISE for 1953: John L. Young, president, left; E. L. Anderson, first vice president; John H. Vohr, second vice president; W. H. Collison, treasurer; James D. O'Roark, secretary.

## NEW BOOKS

*"Fundamentals of Physical Metallurgy,"* by Ralph Hultgren. A valuable text on this increasingly important phase of metal engineering. Explains the phase reactions predicted from phase diagrams. Effects of microstructure on mechanical properties of alloys are discussed. Topics include: Modern theory of martensite formation, dislocation theory, the future of titanium, laws of metallic crystal chemistry, deformation, recrystallization. Prentice-Hall, Inc., 70 Fifth Ave., New York 11. \$9.35. 395 p.

*"Cutting Gear Teeth On A Milling Machine."* A revised and rewritten edition of a useful pocket booklet. Cincinnati Milling Machine Co., Cincinnati 9. Free. 60 p.

*"Fachwörterbuch Werkzeuge,"* by Henry G. Freeman. An English-German dictionary of technical terms, companion book to a previously issued German-English dictionary. W. Girardet, Gerswidastrasse 2, Essen, Germany. \$6.00. 390 p.





Titanium ingot producing locations

# Titanium

## our No. 1 problem metal

By D. I. Brown  
Technical Editor

### Part II

Titanium castings containing from zero to 0.015 C have been made by skull melting methods. New alloy powders soon to be made available promise to help solve some of the difficulties in melting homogeneous alloy ingots. It is possible that the price of sponge made by magnesium reduction might be lowered in the near future. Industry is in the process of working out direct chlorination processes of ilmenite to replace rutile as principal raw material for metal production.

Titanium ores are found abundantly in most parts of the world, but many known deposits are not large enough to be considered of economic importance. The two major titanium ores are ilmenite and rutile. United States is the largest producer of ilmenite which contains 43 to 66 pct  $\text{TiO}_2$ . Australia ranks first in the production of rutile which contains 93 to 97 pct  $\text{TiO}_2$ . The third source of the metal of importance is leucoxene which is chemically altered ilmenite in which hydrogen has replaced some of the iron. Deposits of this ore occur in this country.

Domestic production of ilmenite from 1941 to 1951 is shown in Table XIX. As yet a very small fraction of this ore has been used to make titanium sponge. Most of our metal production has been from rutile. Consumption from 1948 through 1951 of both of these ores classified by end use is shown in Table XX. The major domestic sources of ilmenite and leucoxene are shown in Table XXI.

The titanium metals industry is in the process

of adapting the ilmenites to direct chlorination processes for the basic raw material  $\text{TiCl}_4$  so that it won't be too long before rutile will not be the major ore for metal production. One of the problems in chlorination of ilmenite is that about half of the product of chlorination is  $\text{FeCl}_2$  and  $\text{FeCl}_3$ . Before the  $\text{TiCl}_4$  containing these impurities can be used the iron chlorides must be removed either by boiling off the  $\text{TiCl}_4$  or some other method. It is possible to take the  $\text{TiCl}_4$  and burn it, the products of combustion being  $\text{TiO}_2$

TABLE XIX  
DOMESTIC ILMENITE PRODUCTION  
(net tons)

Year	Production	Shipments		Value
	Gross Weight	Gross Weight	$\text{TiO}_2$ Content	
1941-45 (avg.)	178,236	183,189	83.098	\$4,094,353
1946	282,447	282,708	130.624	4,878,917
1947	336,533	336,061	157.328	5,029,490
1948	383,745	381,508	177.447	5,793,973
1949	402,334	389,234	166.535	6,212,348
1950 <sup>1</sup>	468,320	452,370	230.826	5,606,584
1951 <sup>1</sup>	635,835	510,840	261.982	7,689,272

<sup>1</sup> Includes a mixed product containing altered ilmenite, leucoxene, and rutile.  
Source: U. S. Bureau of Mines.

Part I of this article, covering applications, fabrication, forging, welding and machining, appeared last week, THE IRON AGE, Oct. 9, p. 260.

TABLE XX

## U. S. CONSUMPTION, RUTILE AND ILMENITE

Product	Ilmenite (Gross Wt.)	Rutile (Gross Wt.)
1942	257,535	10,616
1943	302,822	17,634
1944	360,941	14,813
1945	381,178	9,791
1946	404,283	7,134
1947	479,524	7,692
1948:		
Pigments (manufactured titanium dioxide) <sup>1</sup>	1,558,448	2
Welding-rod coatings <sup>1</sup>	145	7,885
Alloys and carbide	6,377	952
Ceramics		175
Miscellaneous	30	21,218
Total	565,000	10,230
1949:		
Pigments (manufactured titanium dioxide) <sup>1</sup>	505,432	2
Welding-rod coatings <sup>1</sup>	165	8,399
Alloys and carbide	4,989	650
Ceramics		143
Miscellaneous	42	44,886
Total	510,608	411,888
1950:		
Pigments (manufactured titanium dioxide) <sup>1,4</sup>	671,335	2
Welding-rod coatings <sup>1</sup>	210	9,218
Alloys and carbide	7,666	1,454
Ceramics		195
Miscellaneous	33	854
Total	679,244	11,721
1951:		
Pigments (manufactured titanium dioxide) <sup>1</sup>	703,068	11,708
Welding-rod coatings <sup>1</sup>	258	2,939
Alloys and carbide	10,024	285
Ceramics		
Miscellaneous	13	2,314
Total	713,383	17,226

<sup>1</sup> "Pigments" include all manufactured titanium dioxide, consumption of which in welding-rod coatings was 1,383 tons in 1948, 1,062 tons in 1949 and 1,439 tons in 1950.

<sup>2</sup> Included in "Miscellaneous" in order to avoid disclosure of individual company operations.

<sup>3</sup> Includes rutile used to make pigments.

<sup>4</sup> Includes a mixed product containing altered ilmenite, leucosene, and rutile used to make pigments and metal.

Source: U. S. Bureau of Mines.

and  $\text{Cl}_2$ . Thus the  $\text{TiCl}_4$  from ilmenite could be used either as a raw material for titanium sponge manufacturing or as  $\text{TiO}_2$  for the pigments industries.

The chief reason the titanium industries, of which the major industry is pigments, want to use ilmenite is that we have good domestic sources and eventually they hope to lower their unit costs of  $\text{TiO}_2$  for pigments and  $\text{TiCl}_4$  for metal. Ordinarily  $\text{TiO}_2$  for pigment is made by dissolving the ilmenite in  $\text{H}_2\text{SO}_4$ . The iron and titanium sulphates are then dissolved in water and the iron sulphate crystallized out of this solution. The titanium sulphate liquor is then hydrolyzed with steam and  $\text{TiO}_2$  is precipitated out of solution. This product must be washed and sorted.

The rutile crystal has the highest opacity or hiding power of any white pigment and the best method of producing rutile crystals is to burn  $\text{TiCl}_4$  as previously mentioned. These facts indicate why all the chief pigment producers are basically interested in ilmenite or Sorel slag and coincidentally they are vitally interested in titanium, as  $\text{TiCl}_4$  is common to both the pigment and the metal industries.

Slag from Quebec Iron & Titanium Corp., Sorel, Canada, is being tested for both pigments and metal production. This slag contains 75 pct  $\text{TiO}_2$ , around 5 pct Fe, and is concentrated from a hematite-bearing ilmenite which contains 35 pct  $\text{TiO}_2$ . These huge deposits in Canada plus that of this country insures us of an adequate raw material supply.<sup>6</sup>

Rutile costs \$140 to \$160 per ton compared to \$16 to \$20 per ton for iron bearing ilmenites. Costs of raw materials, whether leucosene, regular ilmenite or rutile ores are used, are fairly low. One pound of rutile costs about 7¢ to 8¢ and this will make about 2 lbs of  $\text{TiCl}_4$  so at best using the most expensive ore only 4¢ worth of raw material is used to make 1 lb of  $\text{TiCl}_4$  from which titanium metal is reduced. The present market price of  $\text{TiCl}_4$  runs between 40¢ and 47¢ per lb. Usually 4 lbs of  $\text{TiCl}_4$  are required to make 1 lb of sponge.

The use of 70 pct  $\text{TiO}_2$  slag from the Sorel plant of Quebec Iron and Titanium might change the picture cost-wise. At the present price of slag, \$40.00 gt f.o.b., Sorel, raw materials to make 1 lb of  $\text{TiCl}_4$  would cost but 1¢. These estimated costs are advanced only to illustrate that raw materials costs are negligible compared to the sponge selling price.

The magnesium reduction process to produce titanium sponge is expensive to operate. It is a batch process which produces 1 ton batches of sponge. See Fig. 1, Part I, THE IRON AGE, Oct. 9, p. 260. Although the  $\text{MgCl}_2$  is now being reused through electrolysis and therefore costs have been reduced, the entire process does not lend itself to cheap continuous operation.

At present there is no shortage of sponge. Du Pont, making 2 to 2½ tons per day, sells to DMPA what they cannot market to the ingot makers. About 300 tons of sponge are now in stockpile. Originally \$5 million was set aside by General Services Agency for this purpose. The original contract expired in March 1952 but was extended to Jan. 1953 and unless large orders

TABLE XXI

## DOMESTIC ORE SOURCES

Location	Ore	Producer
California Los Angeles county	ilmenite	Ferro Titan Minerals Co.
Florida Starke county	see below* ilmenite & rutile ilmenite & rutile	E. I. du Pont de Nemours & Co. Rutile Mining Co. Florida Ore Processing Co.
New York Essex county	ilmenite	National Lead Co.
North Carolina Caldwell county	ilmenite	Yadkin Mica & Ilmenite Co.
Virginia Nelson county	ilmenite	Calco Chemical Div. of America Cyanamid Co.

\* Altered ilmenite, leucosene and rutile.

**"It is common practice for each melting unit to blend and mix the sponge . . ."**

are placed before then this contract will again have to be extended.

The sponge shipped by Du Pont to stockpile is good sponge capable of making all of today's alloys and most of the commercially pure types of titanium. Tests made on shipments both by Du Pont and U. S. Bureau of Mines, College Park, show all shipments to be below the specifications, shown in Table XXII with much of it between 140-180 BHN. Original sampling and blending of different batches have been vastly improved by Du Pont as has the quality. As yet there is little correlation between sponge hardness and metal strength or hardness melted from different sponge shipments. It is common practice for each melting unit to sort out, blend and mix the sponge shipments to suit its particular requirements. Rem Cru, Republic Steel and Mallory Sharon all report that sponge quality

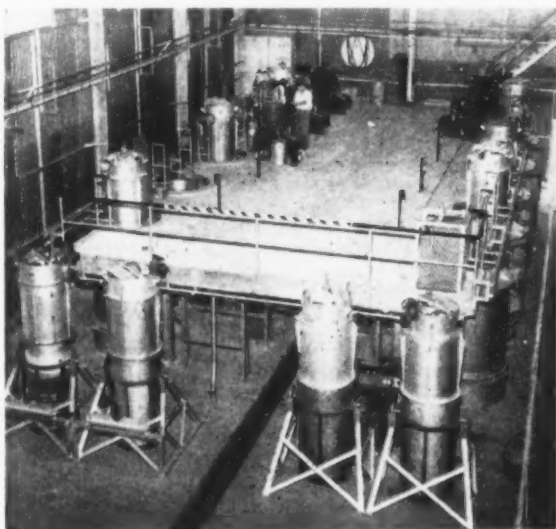


FIG. 18—Part of Bureau of Mines new titanium sponge pilot plant showing ten distillation furnaces installed; five furnaces are complete with individual vacuum pumps. Retorts in foreground have been lifted from the furnaces and placed in cooling stands.

TABLE XXII

**STOCKPILE SPONGE SPECIFICATIONS**

	Nitrogen	Iron	Magnesium	Hardness
Original .....	0.05 max	0.25 max	0.10 max	250 VHN max
Latest .....	0.03 max	0.25 max	0.10 max	225 VHN max

TABLE XXIII

**POWER CONSUMPTION AT HENDERSON\***

Operation	KWH per lb
Feed separation .....	2.0
Chlorination .....	.60
Purification of $TiCl_3$ .....	.05
Mg Reduction .....	2.30
Vacuum Distillation .....	**
Melting .....	1.50
Electrolysis of $MgCl_2$ .....	8.85
Total .....	15.30

\* Estimated.

\*\* Note: Use gas heat, if vacuum distillation is done using electric power 3.5 KWH per lb would be needed.

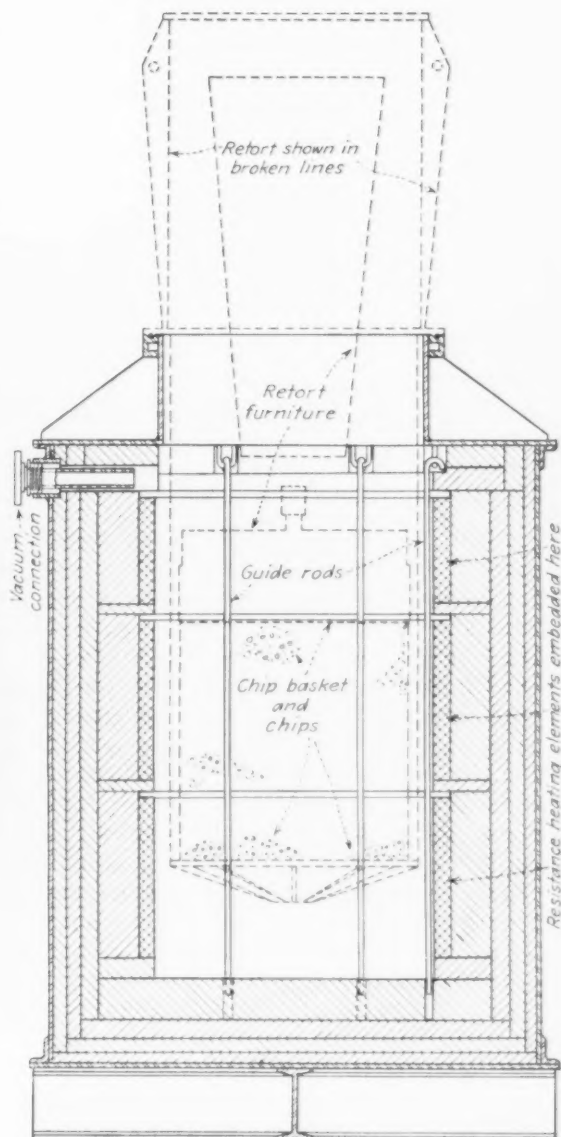


FIG. 19—Cross section of electrically heated distillation furnace shown in Fig. 18 with retort and titanium chips in place. This type furnace is used by the Bureau of Mines for purification of titanium sponge by vacuum distillation of residual magnesium and magnesium chloride. Distilled impurities condense on the retort furniture. The furnace is evacuated as well as the retort. This method permits the use of a thin gage container instead of the more costly heavy wall retorts shown in Fig. 1 Part I.



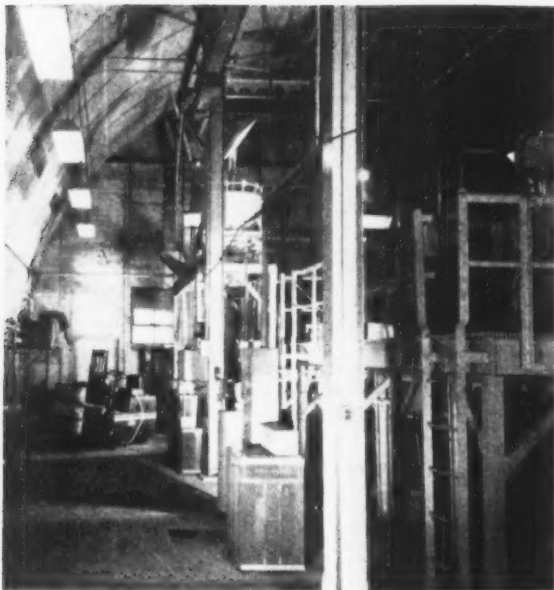


FIG. 20—View of sponge pilot plant operated by Crane Co., Chicago, Ill. This is a magnesium reduction process. Crane Co. buys the  $TiCl_3$  as they do not have facilities to chlorinate the ore. So far Crane Co. has not sold any sponge to the melters.

continues to improve and Rem Cru is now receiving sponge in carload lots.

A melter cannot produce a titanium ingot softer in hardness than the sponge used for that ingot so that sponge hardness which is supposed to be a measure of impurities is only incidental to the hardness or purity of the melted ingot or the product rolled from it. Depending on melting methods and furnace techniques the hardness of the ingot metal will always be harder depending on final oxygen, nitrogen, carbon, hydrogen and alloy content. Because analysis methods, particularly that of oxygen are difficult, expensive and of questionable accuracy, the hardness of a melted button of sponge is generally used as a measure of sponge purity. One company melts a large button and rolls it on a small hand mill into strip. The hardness of the strip is the sponge quality criterion in this case.

## Titanium Melting Techniques

General arc melting practices for melting titanium sponge into ingots are similar in all shops. They are similar in that all shops use water-cooled copper molds in which the melted sponge is deposited in layers and the melting chamber is an air-tight vacuum in which inert atmospheres of helium and argon or both are maintained.

Methods of feeding the carefully sized sponge from air-tight hoppers mounted over the arc furnace are also similar. The chief difference in arc melting practice among the four major producers

Government money has been advanced for two sponge plants; the Du Pont plant to make 2700 tons a year will not be in operation before 1954; production by Titanium Metals Corp. at Henderson, Nev., is far behind schedule. Titanium Metals Corp. which started operation in Oct. 1951 has been producing sponge at Henderson, Nev., on an average rate of 1 to  $1\frac{1}{2}$  tons per day. It was hoped that 10 tons per day would be coming out of this plant by now but production difficulties, general market conditions and many other factors have prevented them from reaching that goal.

The plant has a power contract for 151 million KWH per year from nearby Hoover Dam. This power should be sufficient to make the ultimate tonnage of 10 tons per day. A total of about 15 KWH are required to make 1 lb of titanium ingot at Henderson. Power breakdown by operation is estimated in Table XXIII. Even had Henderson reached full production on schedule the combined sponge production of all four existing plants would have been far below the figures for which government is calling.

The new sponge plant just completed by U. S. Bureau of Mines, at Boulder City, Nev., see Figs. 18 and 19, will produce sponge as needed for government stockpile or Ordnance Corps. Ordnance has one sponge specification, MIL-T-12118 Ord, which specifies a sponge of extra high purity with a maximum melted button hardness of 140 BHN. This can't be compared to iodide sponge which runs around 90 BHN but it will be somewhat purer than that produced by other makers, see Fig. 20.

It is very likely the sponge price will be lowered in the near future. The new price won't be as low as that incorrectly reported in the daily press but \$3.00 per lb sponge is a definite possibility and will probably be offered even before the two new government plants have reached full capacity. With a \$3.00 sponge material at least \$4.00 a lb can be shaved off all commercially pure titanium products like bars, billets, sheets, etc. The lower sponge price may not materially reduce the price of alloys for some time however.

is found in the type of electrodes used. Carbon, tungsten and consumable electrodes have been used to date. There is no doubt that a consumable electrode furnace, like the Herres furnace, operated by Titanium Metals Corp., is the ultimate goal of all producers but these 5-ft electrodes are expensive and difficult to make. Little is known concerning the ease of operation when using such electrodes except that control of the melting operation is known to be most critical.

One of the earliest melting problems was to

**"Ingots are improving . . . best surfaces are produced with consumable electrodes . . ."**

control the melting rates of the sponge as it was gravity fed into the arc zone. Using consumable electrodes the melt-off rate of the electrode as well as the fusion rate of the sponge and alloy additions must be correlated. In both cases length of the arc and consistent and proper power input are necessary. If the arc goes out it generally means a new ingot must be started. If too high a temperature is built up in the melting zone other problems arise, such as excessive elephant-skinned ingots which cause higher scrap losses in machining the surface of the ingots, see Fig. 21. Ingot surfaces are improving rapidly and here again the best surfaces are produced with consumable electrodes.

Generally, tungsten electrodes melt the sponge at faster rates than carbon electrodes. For the same degree of fusion, using tungsten at 50 v and 100 amp, the required current with carbon electrodes would run around 50 v at 1000 to 1200 amps.

Melting rates vary considerably from shop to shop but generally in a single electrode furnace, see Fig. 22, about 4 to 6 lb per min. is usual. Power consumption varies with furnace size, number of electrodes and type of electrodes. Usually the power requirements vary from 4 kw-hr to 1.50 kw-hr per lb melted. The first figure is for carbon electrodes while the latter figure is for consumable electrode melting.

Contamination of arc melted titanium usually comes from the electrodes. With carbon electrodes it is difficult not to pick up some carbon even with the best techniques. Rem Cru has achieved great success, however, using carbon tipped electrodes. The carbon averages under

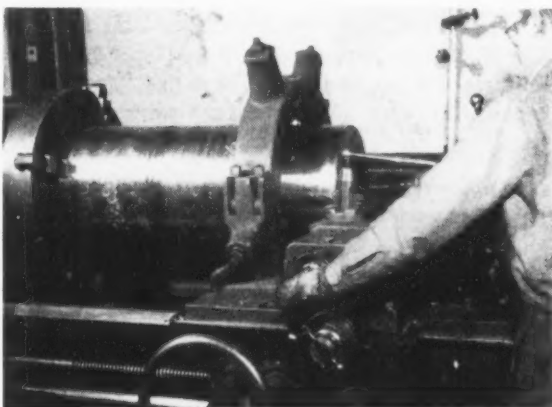


FIG. 21—This ingot being conditioned at Rem Cru for roll cogging or forging weighs about 1000 pounds, which is the average ingot weight being produced at the moment.

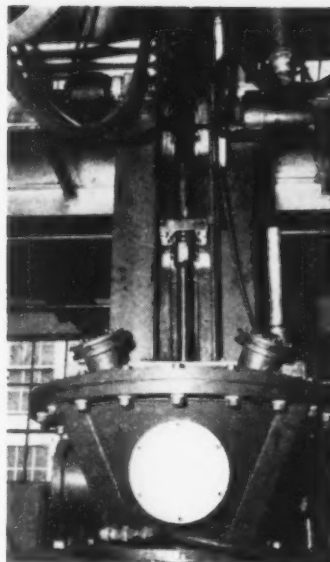


FIG. 22—Top of the arc melting furnace at the Mallory Sharon Titanium Corp., Niles, Ohio. This furnace is typical of the single electrode being used by other producers. The electrode control shaft is shown in the center, bottom of the feed hoppers can be seen at extreme top of the photo.

0.10 in this shop. Fig. 23 is an overall view of Rem Cru's melt shop. Carbon acts as a grain refiner in titanium so that carbon contents up to the limit of solubility, 0.20 C max, impart strength to the metal without loss of ductility as does silicon. The reason producers don't melt out at the maximum carbon solubility content is that this carbon is detrimental to good ductility and particularly to ductile welds.

Contamination from tungsten tipped electrodes was one of the early problems, one of which was caused by splashing of the melted sponge. Some of the first sponge made contained too much  $MgCl_2$  which was blamed for causing the splashing. Today's sponge is much lower in  $MgCl_2$  but tungsten contamination is still a problem.

Generally, the molten titanium that reaches the tip of the electrode corrodes the tungsten along the grain boundaries and if allowed to proceed too long causes these grains to break off from the electrode and fall into the top of the ingot where they do not go into solution. To avoid these possibilities it is general practice to start a tungsten arc by using a magnesium ribbon to prevent getting any melting titanium on the electrode tip. Another practice is to melt the sponge using as long an arc as possible. The latter practice prevents contamination but a long arc is sometimes hard to maintain and even if kept constant the melting rate is greatly slowed down.

The next few years will see great improvements and changes in the type of arc melting furnaces. Although consumable electrodes made from sponge can be formed by briquetting, extruding and sintering or forging these methods

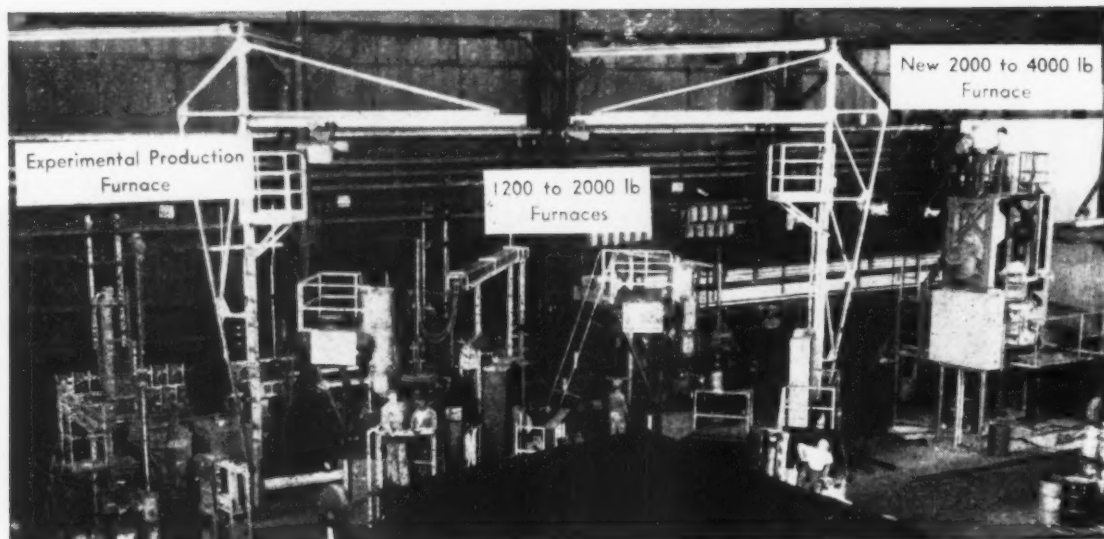


FIG. 23—Rem Cru melt shop at Midland, Pa. showing the three arc furnaces now producing plus the partially erected 24 in. diam furnace. Size of this melt shop will soon be greatly expanded.

are expensive. The electrodes could also be made in a small furnace as a cast ingot, but this entails double melting and possible contamination in the cast electrode. It is also possible to make a consumable electrode in which the alloys would be contained. Any method to produce a larger molten pool of metal will tend to produce better quality ingots at cheaper costs. Multiple arc furnaces are the next step which if combined with a good scrap using practice could greatly lower ingot costs.

The melting of alloys has presented the problem of segregation which must be solved. Because the metal is deposited in stalagmite form in the water cooled mold, proper alloy distribution is controlled by rate of fusion not by solution rates in a molten pool. Even larger molten pools under the electrode won't cure all the present troubles as the metal is molten for too short a period to prevent rapid freezing before the alloys are well mixed and homogeneously distributed.

A step in the direction of better alloy additions has been taken by the Electro Metallurgical Co., a division of Union Carbide and Carbon Corp. As in the alloy steel industry, the best way of introducing alloying metals during the arc melting of the titanium ingot is through the use of master alloys. Present methods of producing the

master alloys are either to make large ingots of the alloy and crush to size, or to bond micro-homogenized powder. The Electro Metallurgical Co. has developed a series of master alloys, see Fig. 24, especially designed to have a high degree of uniformity of composition, to melt readily, and to handle satisfactorily in the different dispensing mechanisms.

At present, titanium master alloys have been tested in very limited quantities to add manganese, iron, chromium, aluminum, vanadium; or iron and chromium simultaneously. Other alloys can be readily produced as required by the titanium industry. The alloy content of these master alloys will vary depending upon the alloy in question; for example, a 75 pct Ti—25 pct V alloy has been produced, and other master alloys have been made containing 50 pct alloying ingredient. A pilot plant is now in the course of construction to produce these alloys.

Horizons, Inc., is working on a new reduction process under the auspices of Office of Naval Research. This material produced on an experimental basis is in the form of thin small particles of titanium. It is hoped that this material can eventually be used to replace sponge as charge material for arc melting. These particles are exceptionally pure but their light weight does not lend them to present melting practice. In order

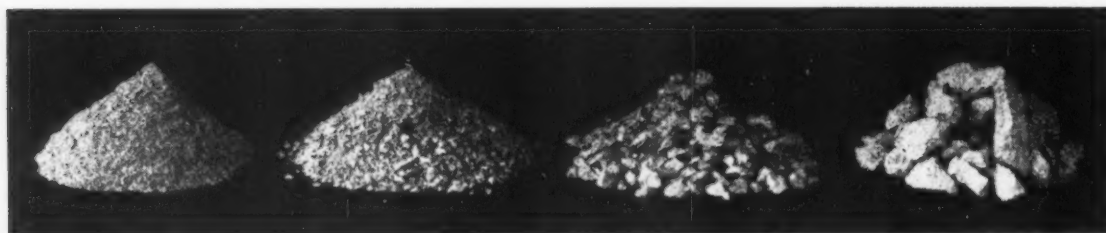


FIG. 24—Samples of the titanium master alloys made experimentally by Electro Metallurgical Co. Mesh size of the sample on the left is 100xD. The coarse material on the right is roughly  $\frac{1}{2} \times \frac{1}{4}$  in. screen size.



**"By 1st quarter . . . ingots weighing up to 2 tons will be available . . ."**

to properly gravity feed, these particles may have to be compacted into a heavier mass.

To date the largest arc furnaces in operation are believed to be 19 in. in diam. These furnaces are casting ingots weighing up to 1 ton. By 1st quarter 24 in. diam furnaces will be operating and ingots weighing up to two tons will be available. Some of the new furnaces will be of the continuous retraction type so that ingot size will be chiefly restricted by the length of the cut-off multiple that can be satisfactorily handled.

Induction melted ingots are available from most producers, see Fig. 25, but little market exists for this product because carbon or graphite crucibles are used. Carbon contamination can be decreased by a number of methods but even the best practice short of skull melting (detailed under casting) produces a metal too high in carbon for many uses. Combination induction and arc furnaces have been built and tested. In this practice the induction coils heat the charge, either all scrap or all sponge or any combination of each, short of the melting point. At this point one or more electrodes mounted in the top of the furnace are struck and plunged into the charge. Fast melting and pouring either through a plug in the furnace bottom or a side door is then necessary and critical lest contamination from the crucible and the electrodes ruin the heat.

Generally, alloy segregation in induction melted ingots is less than in arc melted material. The large molten pool plus the stirring action of the current decrease segregation. Induction melting can utilize scrap which need not be critically sized as is the scrap used in arc melting. Up to 25 pct scrap charge has been used by one company in arc melting but it is not believed to

be an economical practice. Scrap for arc furnace remelting must be cut  $\frac{1}{2}$  in. max dimension. It must be clean of oil, grease or any other contaminant. In order to use turnings the scrap chips must not be discolored by an oxide scale lest this contamination be picked up also. Titanium is so prone to oxidation, when being severely cold worked, that even crushing of sponge is done in partial vacuum or under atmosphere protection to preclude any oxide formation.

In research projects arc melted ingots are sometimes turned down into all chips and these chips used as charge material for remelting the actual ingot to be used for experimental purposes. However, this is not a commercial practice.

Titanium scrap, now a drug on the market, will eventually be used by the titanium industry. Such a process will do for titanium what the Siemens' openhearth furnace did for the steel industry. Until a scrap process is developed and used in tonnage titanium scrap will be used mostly as a substitute for ferrotitanium in steelmaking.

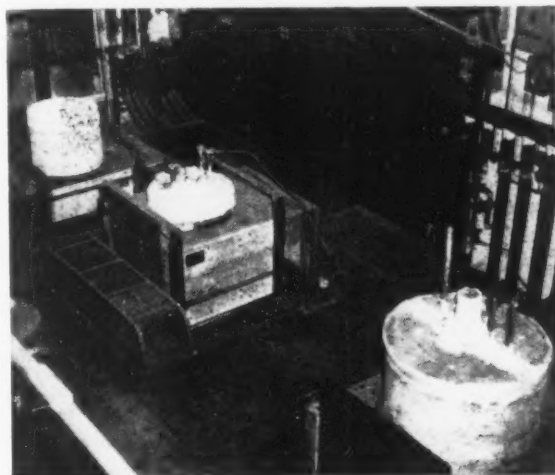


FIG. 25—Induction melting furnace shop of Mallory Sharon at Niles, Ohio. The two smaller furnaces are 500 lb units. The furnace at the right is a 1000 lb induction melting furnace.

All of the problems found in melting titanium plus a few more are encountered in casting the metal. Contamination again is the key. Because casting requires that all the metal be molten prior to pouring contamination possibilities are greatly increased as the molten metal must be held in some kind of a container. Titanium digests all known refractories although graphite resists this attack to some degree.

Oxyfluoride refractories are thought to be superior to any known oxide compounds with respect to non-contamination but further research is needed before this material can be proved.<sup>7</sup> Another special project to investigate possible

refractories tested 3 metals and shell molds made of silica, silicon carbide, zirconia, aluminum and zircon.<sup>8</sup> Results of these tests to be published shortly in these pages are not conclusive but at least good surface, reasonably sound castings and minimum contamination of 0.002 on a  $\frac{1}{2}$  in. cross section were achieved and future possibilities look fairly bright.

Two major attempts to make titanium castings have employed graphite molds. With good skull melting techniques the carbon can be held from practically zero to 0.015 max. In both cases to be cited here the melting furnace and the mold are encased in a vacuum chamber into which

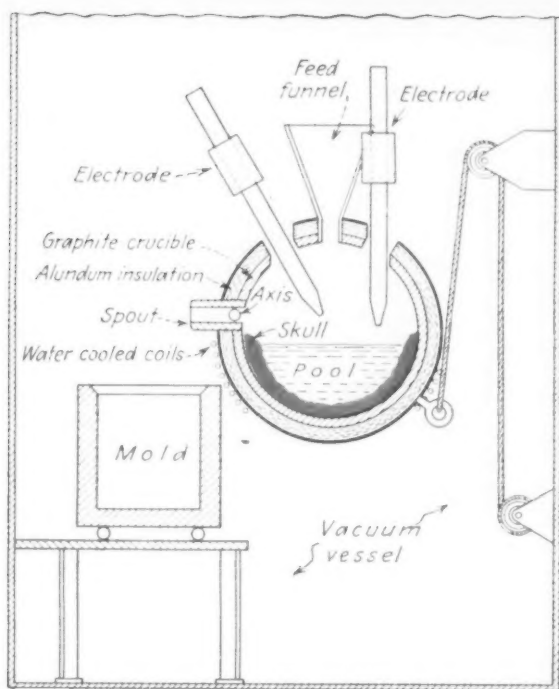


FIG. 26—Schematic cross-section of vacuum skull casting furnace developed by Rem Cru Titanium Corp. under Ordnance Corps contract. The skull shown in color acts as a refractory to contain the molten metal.

inert gases are introduced and both employ *skull melting* techniques.

The first method, developed by Rem Cru Titanium, Inc., under an Ordnance Corps research contract is briefly outlined wherein castings up to 100 lb have been made: "The expedient which circumvents melting contamination on a commercial scale today is that of arc melting and freezing a thin skin from the melt on a water-cooled copper crucible. Thus the titanium is melted in itself. However, the amount of metal molten at any time is quite limited because of the rapid heat transfer through the water-cooled copper mold. Ingots are formed in such equipment by gradually feeding in the charge and melting it. Only the very top of the ingot is molten.

This is satisfactory for ingots made for forging or rolling. Casting shapes, however, requires that all the metal in the casting be molten just prior to pouring. For sometime Rem Cru has been developing equipment and procedures to accomplish this while avoiding crucible contamination by maintaining a thick skull of solid titanium between the crucible and a deep pool of molten titanium.

The only method yet found to accomplish this is by juggling of heat inputs, losses and transfer rates so a sufficiently gradual and steady thermal gradient is established between the arc-heated pool and the crucible. By proper controls, an inch thickness or more of titanium remains solid in contact with the crucible. Fig. 26 shows a sketch of a tilt-pour furnace which illustrates this.

The heat transfer controls employed can read-

ily be appreciated by examining this sketch. The primary source of heat is a direct current arc in which a graphite electrode is the cathode and the molten pool is the anode. The arc circuit is completed through the conducting graphite crucible. Thermal insulation is provided by granular alundum which is packed around the crucible. This refractory layer is surrounded by water-cooled copper coils which can add or subtract heat depending upon whether an induction heating current is employed or not.

The entire assembly, including the graphite mold, is contained within a vacuum-tight shell. The system is evacuated prior to arcing to remove contaminating gases. Purified argon is then admitted, the arc is struck, induction heating or water cooling is applied as required and the melt is poured when thermocouples in the crucible indicate the skull has reached its minimum desirable thickness.

Laboratory evaluation of skull melting and pouring has been relatively successful at Rem Cru. A cylindrical casting over 100 pounds in

TABLE XXIV

MECHANICAL PROPERTIES: CAST TITANIUM

Composition	0.2 Yield Strength (psi)	Ultimate Tensile Strength (psi)	Elongation (% in 1')	V-Notch Charpy (foot pounds)
92Ti-4Mn-4Al . . . .	94,100	118,000	9	17
93Ti-7Al . . . . .	98,500	109,400	13	30

Source: Rem Cru Titanium, Inc.

weight and free from crucible contamination has been made from the furnace. Many smaller castings have also been made.

Further experimental evaluation of the skull-type titanium casting furnace is being conducted by Rem Cru under Ordnance Contract DA-10-059-ORD-188. The preliminary mechanical property results shown in Table XXIV have been obtained on skull-cast titanium alloys under this contract.

These as-cast results compare favorably with data from wrought materials of the same nominal compositions. The production of strong, tough titanium castings is eventually possible. But a series of very formidable technical and economic difficulties exist due to the inherent vulnerability of the metal to contaminations."<sup>9</sup>

The other casting method, closely parallels the experience of Rem Cru except that definite shapes weighing less than 10 lb are the major goal of this research: "A technique has been developed for casting titanium alloys without contamination with carbon or other elements. This furnace

**"Cylindrical castings of 100 lb, free from crucible contamination have been made . . ."**

**"Electric arc maintained between a water-cooled tungsten electrode and the Ti skull . . ."**

utilizes a direct-current arc as the source of heat and a skull of solid titanium as the container for the bath. This furnace, Fig. 27, incorporates a water-cooled copper crucible as the melting chamber with the mold cavity attached to one side of the crucible. A retractable water-cooled copper door covers the mold until the bath is ready for pouring. The furnace is mounted on trunnions so that the whole assembly may be tilted to pour the casting.

Melting is carried out with a direct-current electric arc maintained between a water-cooled tungsten electrode and the titanium skull which forms the anode. A purified argon atmosphere maintained in the furnace cavity prevents contamination of the molten metal during the melting and casting operations. A flexible gas-tight connection is formed around each of the movable water-cooled leads by a suitable sleeve of gas-mask hose. The mold is of CS grade graphite machined to a shape which provides the necessary gates and risers and permits removal of the finished casting without damage. No other mold refractory has been found which does not contaminate or react with the contained titanium during casting.

During melting, the arc is directed onto the top surface of the skull which is about 6 in.

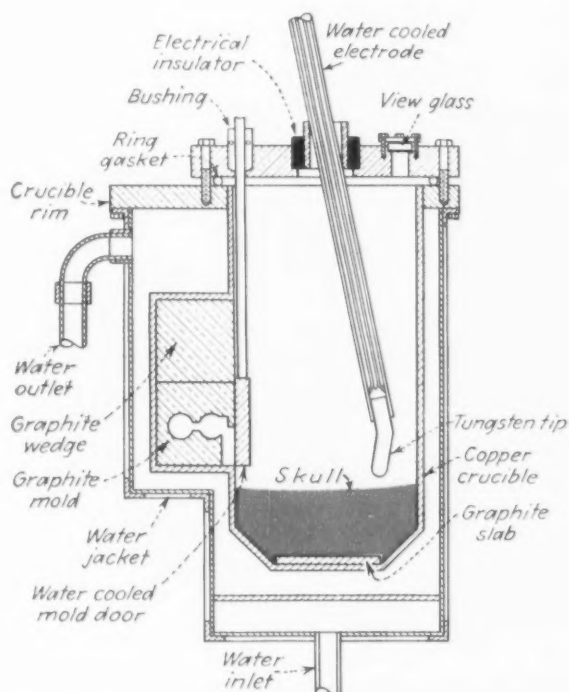


FIG. 27—Cross section drawing of the skull melting furnace developed at Frankford Arsenal. The mold which is also encased in the vacuum furnace is machined from solid graphite.



FIG. 28—This experimentally cast connecting rod weighs 1/2 lb. The mold and cores were made of solid graphite machined to shape. Hardness of the rod as cast, 155 Bhn.

square by 2 1/4 in. deep and weighs about 14 lbs. The arc is maintained at about 1100 amp and 25 v for 15 min to establish a molten bath. The surface layer of the skull becomes molten and when equilibrium has been reached, the mold door is raised, the power is shut off, and the whole furnace is tipped to pour the bath into the graphite mold cavity.

In this method the poor thermal conductivity of titanium is utilized to permit the formation of a titanium bath of adequate size in a container formed by the solid titanium skull. A thin slab of solid graphite between the copper crucible and the titanium skull further augments the poor thermal conductivity of the titanium to permit a higher degree of superheat in the molten bath. Obviously, in this technique the skull must be of the same composition as that desired in the resultant casting. In Fig. 28 is shown a connecting rod cast from the furnace."<sup>10</sup>

Just as in all other phases of titanium the big pressure for castings has come from the Military. Eventually satisfactory techniques will be perfected and new refractories will be found. Until then it is believed that forgings will have to be used. One of the reasons castings were wanted originally was that high machining costs made the use of forgings very expensive. Machining costs are coming down as the industry gains experience with the new metal, see Part I, THE IRON AGE, Oct. 9, p. 278.

#### References

- <sup>8</sup> Brown, D. I., "More Titanium Oxide Now Available," The Iron Age, Nov. 1, 1951, p. 119, Part I. The Iron Age, Nov. 8, 1951, p. 129, Part II.
- <sup>9</sup> Private communication Sept. 12, 1952.
- <sup>10</sup> Private communication Sept. 21, 1952.
- <sup>11</sup> Supplied by W. L. Finlay, R. F. Malone and P. F. Darby, Rem Cru Titanium, Inc.
- <sup>12</sup> Supplied by O. W. Simmons, R. E. Edelman and H. Markus, Frankford Arsenal, Ordnance Corps., U. S. Army.



# Moly Based Metal Ceramic

## designed for high temperature use

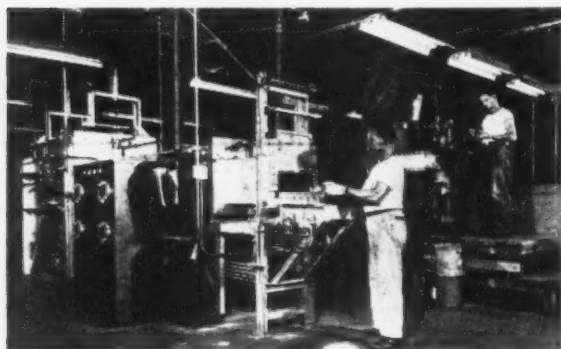
Development of a metal-ceramic, D-1922, which can withstand the high temperatures encountered in jet aircraft and guided missiles has resulted from 2 years research by P. R. Mallory & Co., Inc.

In 1950, a survey of 450 firms which previously had expressed an interest in materials of this nature showed 45 pct of failures were attributed to oxidation, see table.

Based on this study, research was directed toward production of a material with characteristics necessary to withstand thermal shock, resist oxidation, and operate dependably at temperatures to about 2700°F. From these efforts, Mallory produced the D-1922 metal-ceramic. The material is a hybrid incorporating molybdenum disilicide and suitable ceramic components.

Properties of the D-1922 metal-ceramic are as follows:

- 1—Modulus of rupture (determined on square specimens acting as single-centered loaded beams): 26,000 to 30,000 psi at room temperature and in excess of 2000 psi at 1000°C.
- 2—Hardness: RA 80-100 at room temperature.
- 3—Density: approximately 5 g per cu cm.
- 4—Electrical resistivity: 80 microhm centimeters at 68°F.
- 5—Temperature coefficient of resistivity: 0.26 pct per deg F between 68°F and 570°F.
- 6—Thermal expansion coefficient (average linear):  $4.05 \times 10^{-6}$  in. per deg F between 68°F and 1470°F.
- 7—Thermal shock: Will withstand, without failure, a minimum of 25 cycles from 2460°F to an air blast.
- 8—Oxidation resistance: Shows a weight gain of 0.60 milligrams per square centimeter for a one-hour heating at 2550°F.

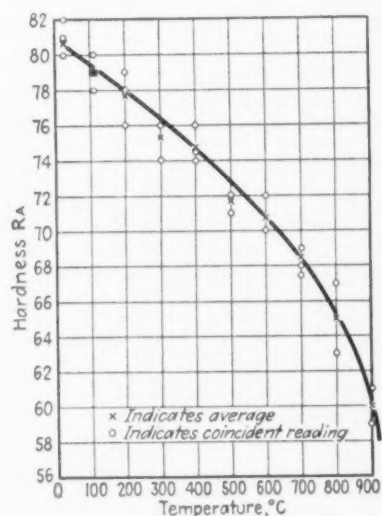


PRESS AND FURNACE setup used in making D-1922 metal-ceramic at the P. R. Mallory Co., Inc. Material may be machined in "green" condition; ground after firing.

### METAL-CERAMICS SURVEY

Reasons for Failure	Pct
Oxidized	45
Low Thermal Shock Resistance	28
Low Abrasion Resistance	8
Low Impact Strength	5
Others	14

Working Temperatures, Deg. F	Pct
Room Temperature to 932°	10
933° to 1832°	25
1833° to 2732°	40
Over 2733°	25



VARIATION: Hardness with temperature, D-1922 metal-ceramic.

D-1922 is fabricated by powder metallurgy techniques. The material can be turned, drilled, filed, and cut in pre-fired or "green" condition. After the material has been fired, it may be cut by an abrasive cut-off disk and machined by grinding.

Potential uses of the material include: kiln furniture, saggers, gas turbine parts, combustion chamber parts for jet aircraft and guided missiles, sand-blast nozzles, exhaust tube linings, hot-draw or hot-press dies, and induction brazing fixtures.

While classified as a conductor, slight modification of the material's composition results in electrical properties which suggest possible use for high temperature resistors.

D-1922 has effectively resisted erosion when subjected to a mixture of steam and  $\text{SO}_3$  at high temperatures. In addition, it is insoluble in  $\text{HCl}$ ,  $\text{HNO}_3$ , and  $\text{NH}_4\text{OH}$  at room temperature. The material is currently undergoing prolonged testing at elevated temperatures to determine stress rupture, creep, etc.

## Use "**Dag**" Dispersions...the Really Effective Hot Metal Working Lubricants

Use "**dag**" colloidal graphite dispersions to lubricate under all conditions of extruding, deep piercing, forging, stretch forming, wire-drawing and ingot stripping...to assist in the parting of castings...to provide a lubricant that is impervious to degreasing agents...to lubricate permanently parts that may be subject to extremely high temperatures.

"**Dag**" dispersions protect against heat...fatigue failures...heavy loads...in short, *protect against all the causes of wear*. At virtually any temperature experienced in hot-metal work "**dag**" colloidal graphite overcomes friction and heat and keeps parts lubricated for action.

DRY FILMS of lubricant formed with "**dag**" dispersions have extremely low coefficients of friction; they resist oxidation and function far above the burning-point of conventional petroleum lubricants.

Dispersions of molybdenum disulfide are now commercially available. Experimental samples will be sent on request.

More data on the advantages of "**dag**" colloidal graphite for metal-working operations are contained in a recent bulletin available on request. Write TODAY for Bulletin No. 426-13K.

*Acheson Colloids is equipped to do custom disintegrating, dispersing, and stabilizing of solids in a wide variety of vehicles. If you are in need of this type of service, tell us about it. We may be able to help you.*

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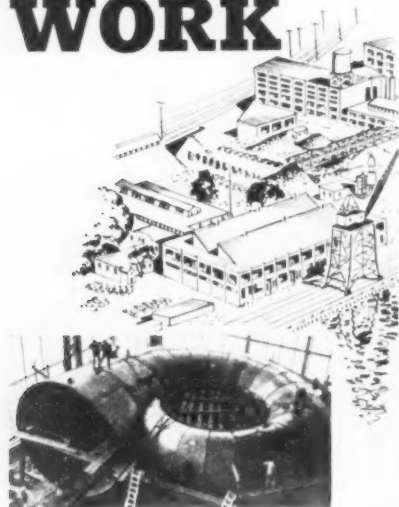
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# STEEL PLATE WORK



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and other heavy steel plate work are fabricated at Pusey-jones of Hot-Rolled, High-Strength, Low-Alloy Steel.

Every facility for large scale metal fabricating: — Heavy plate shop equipment — Rolls — Shears — Bending furnaces. Stress relieving furnace 33'x18'x16' up to 2100°F. Machine shop for facing, turning, and boring. 50 ton capacity gray iron foundry. Deep-water transportation on one side, the Pennsylvania RR on the other. Talk to our development engineers.

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# PUSEYJONES

## Technical Briefs

Engineering

### ELECTRONICS:

Engineers get peek at latest developments at Chicago meeting.

Over 5000 electronics engineers and manufacturers, registered for the eighth annual electronics conference in Chicago recently, got a looksee at the latest developments in electronic equipment.

In 3 days the specialists were briefed on radar, memory tubes, electronic computers, television, servomechanisms, audio, industrial measurements, reliability tests for components, transistors. They were given a guarded look at current military developments in electronics, and saw equipment exhibited by more than 60 producers.

Some of the things they heard were:

**Small** — Cadmium sulfide crystals as a semi-conductor in transistors was suggested as equal to germanium, selenium, and oxides of copper and aluminum. Application would be in radio units half the size of a kitchen match.

**Military-LORAN** — Long range navigation by electronic means, is back, in an advanced form. Continuous recording equipment was described that would give a continuous navigational fix during the entire period of an air flight or sea trip. The system has been field tested, looks particularly good for aircraft use.

Transistors, tiny units that allow the building of pocket-sized electronic equipment, are being improved. Studies will seek to allow use of higher power capacities with resultant greater power loads allowable.

**Radar** — Development of a quality factor that would compare the display effectiveness of two or more radar systems, should lead to refinements of existing radar in visually evaluating the "pips" and patterns on the screen. An improved method for measuring loudspeaker output cuts test time from two days of arduous labor to one hour and one sound reading.

### BIG PLANER:

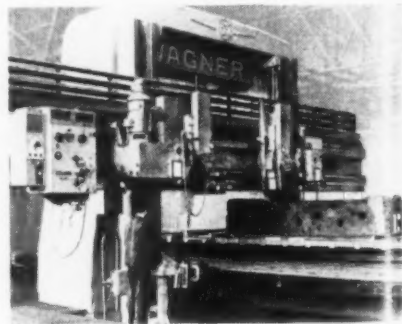
Unusual features cut costs in machining large parts.

Transverse, vertical, bevel and longitudinal planing operations in the toolroom can all be carried out with a single set-up on work pieces as large as 177 in. wide x 110 in. high x 394 in. long, through the use of a new double-column planer. Other operations possible with the same set-up include vertical and bevel slotting, longitudinal and transverse milling.

Adaptability of the Wagner Planer to a wide variety of machining operations without re-alignment of the work piece greatly reduces the costs of setting up heavy, bulky pieces. This feature is of particular importance in the machining of such pieces as large dies for forming aircraft parts.

**Variable Drive** — Machined on conventional planers, it is frequently impossible, after planing in one direction, to re-align the piece for planing at right angles. In this case, however, the left-hand cross rail head has an infinitely variable drive for feeding it along the cross rail, permitting transverse planing with the original set-up with the longitudinal movement immobilized.

For further savings in setting-up time, the table is divided longitudinally into two sections with independent travel. The planer is distributed by Kurt Orban Co., Inc., New York.



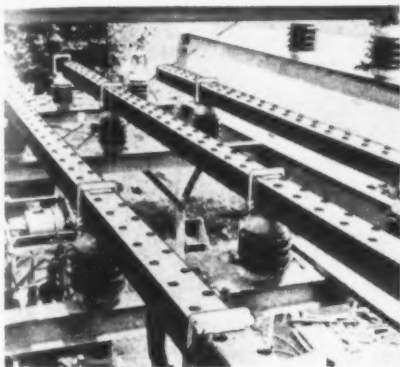
**DOUBLE-COLUMN** planer handles transverse, vertical and longitudinal planing, as well as vertical slotting, milling and reaming operations on bulky work pieces. Portable push-button stations permit operator control from points convenient to tool heads.



## SQUARE COPPER BUS:

Greater current carrying capacity, strength in square tube bus.

A ventilated square copper tube bus that provides increased current-carrying capacity for a given area of metal has been developed by Chase Brass & Copper Co., Inc. Ventilating holes provide air circulation for dissipation of heat from internal tube surfaces and increase



**VENTILATED** square copper tube bus increases current carrying capacity and provides a higher ratio of load capacity to weight per foot than unventilated tube or bus bar with greater square area of metal.

ac current-carrying capacity approximately 20 pct.

**Corners**—Rounded corners of the tube tend to reduce local heating from concentration of current in corner areas. Skin effect, which causes heating in the solid rectangular bus indicated above, results in current being less uniformly distributed throughout the conductor than is the case when square tubing is used.

**Stronger**—Square copper tube bus also provides mechanical strength in all directions so that longer spans, without unduly large sags, are obtainable between supports. Mechanical strength is also an advantage during heavy fault currents and to provide increased wind resistance and ability to withstand the weight of ice and snow when bus is installed outdoors.

The combination of greater mechanical strength plus the ability to greater loads indicates possibilities for savings in power setups.

Turn Page

## STANDARD TOOL ON SPECIAL JOB

*Reduces TOOL COSTS 65%*



Here's what happened during an inside threading operation at an atomic special project. A special carbide cutting tool was being used for the job, which requires a No. 10 Acme thread in steel S. A. E. 1030. Everything went wrong, however. Tools were breaking, and the result was not one piece was completed.



Mr. Howard G. Frisby, Jr., representative of Choctaw, Inc., Memphis, came to the rescue. He furnished a Wendt-Sonis standard AR style carbide tool bit, turned it up sideways and reground it on the job. Breakage was eliminated, the job finished and tool costs reduced 65%.

### YOUR CHOICE OF CARBIDE

When you choose Wendt-Sonis, you select the brand and type of carbide you want. You also select from a complete range of Wendt-Sonis standard tool sizes. All Wendt-Sonis carbide-tipped tools have rust-resistant tool shanks made from highest quality steels for greater economy and faster production.

### Free! CHIP BREAKER CHART

Contains illustrations of chip-breakers, grinding instructions and recommendations for their use. Chart size with tab for wall hanging. Write: WENDT-SONIS COMPANY, Hannibal Mo.



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CUTTERS • REAMERS • ROLLER TURNING TOOLS • SPECIAL TOOLS

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Anti-Corrosive has millions of stainless steel fastenings in stock for immediate delivery . . . plus exceptional production capacity that can fill your requirements beyond stock items faster, better!

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 IN FASTENINGS OF  
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 1094 New Britain Ave., Hartford, Conn.



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*The Iron Age*

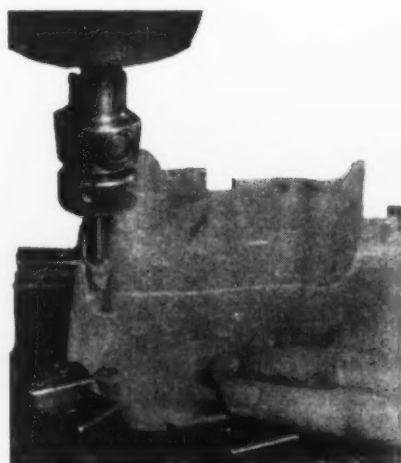
100 East 42nd St., New York 17, N. Y.

—Technical Briefs—

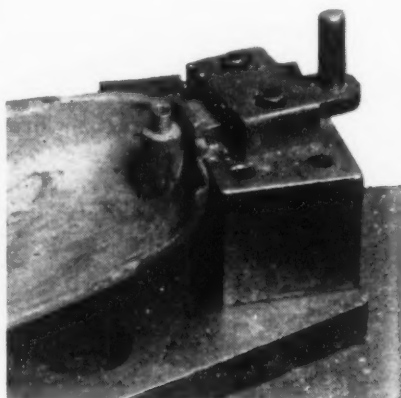
**THREADS:**

Inserts in magnesium cast covers provide strong threads.

In converting side covers of calculating machines from aluminum to lighter weight magnesium castings, engineers of Marchant Calculating Machine Co., Oakland, Calif., had to offset limiting physical characteristic of the magne-



BOSS ON RIGHT side of cover being tapped to receive thread insert. Standard drill sizes are used and thread fits from class 1 to 3 can be produced.



THREAD INSERT of stainless steel diamond wire partially installed in magnesium cast cover used on calculating machines.

sium low tapped thread strength.

Required strength in the metal was obtained by installing stainless steel wire thread inserts into the prepared thread bosses of the cast side covers. Three inserts are used in each cover, forming 5/16-18 internal threads 5/16 in. long.

The inserts, multipurpose, are of helical coils of diamond-shaped



## the smith had the right idea

When it comes to forming metals, there's no substitute for the hammer. No other method gives metal equal toughness and resiliency.

The Torrington Swager operates on the same principle—delivering 4000 hammer blows a minute. It reduces, tapers and points rod, wire and tubing accurately and economically... using every ounce of stock.



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### THE TORRINGTON COMPANY

Swager Department

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Makers of

**TORRINGTON NEEDLE BEARINGS**

## —Technical Briefs—

stainless steel wire, serve three purposes. They provide internal threads having a tensile strength up to 50 per cent greater than is possible in the magnesium alone.

The tight-fitting stainless steel inserts, made by Heli-Coil, prevent the electrolytic action that would result in corrosion if standard steel threaded fasteners came in direct contact with the magnesium.

**Hard Threads**—Should the side plates need removal for servicing the machine, there is no risk of damage to threads. The inserts are harder and tougher than any machine screw. An increase in assembly time was reported as a result of using the thread inserts.

## STANDARDIZATION:

**New policy cuts maintenance, output costs on military vehicles.**

A parts standardization program borrowed from mass production techniques is helping cut production and maintenance costs of U. S. military vehicles.

The mass production principle has been broadened in the military vehicle field to extend to planning and designing of military models. Many standard parts may now be used interchangeably in more than one type of tank or truck. The result is lower cost through greater volume of these parts and ease and simplification in maintenance.

This is how it works. Today one tank engine serves 11 tanks and tank-family vehicles. Each World War II engine had more than 5000 parts, none of which could be interchanged with other models. New tank engines now have fewer than 2000 parts, 60 pct of which can be interchanged.

In the light tank family 60 major components are interchangeable. These include engines, generators, torsion bars, ignition systems and suspension systems. The Army's catalog of automotive spare parts has been reduced from 450,000 to 125,000 separate items as a result.



"Joe, who can make these small parts to our close 'specs'?"

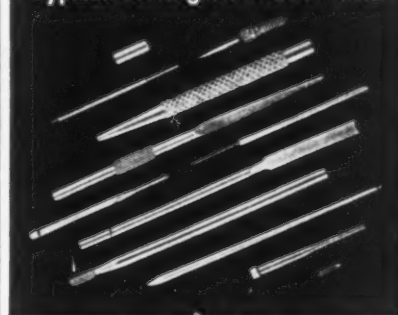
"Torrington can, Tom. They have the experience and equipment to maintain precision tolerances on any quantity of small metal parts."



Small precision parts often take more production time than can be spared. That's why many leading manufacturers have turned over their parts problems to Torrington. Using the latest automatic and semi-automatic equipment, our Specialty Department produces hundreds of thousands of parts every day to the exacting specifications of hundreds of customers. These companies—some of them Torrington customers for over 40 years—have learned that they save both time and money when their small metal components are made by Torrington.

Why not send us a blueprint or sample of *your* small parts? We will quickly tell you how little it costs to have uniformly accurate components.

## Typical Torrington-Made Parts



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Specialty Department

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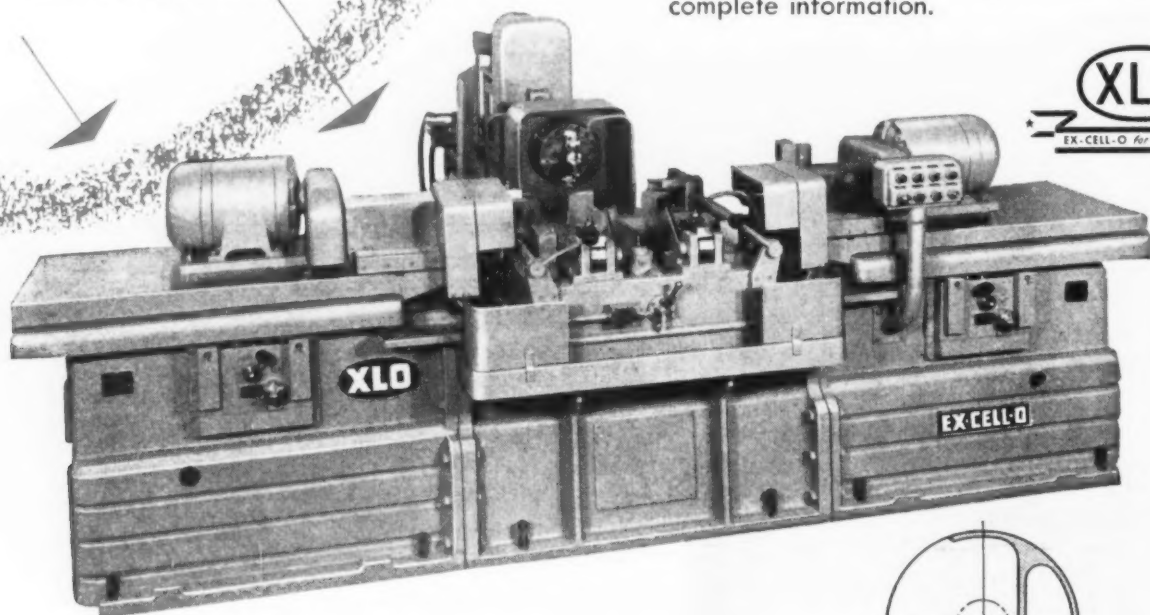
Makers of

**TORRINGTON NEEDLE BEARINGS**

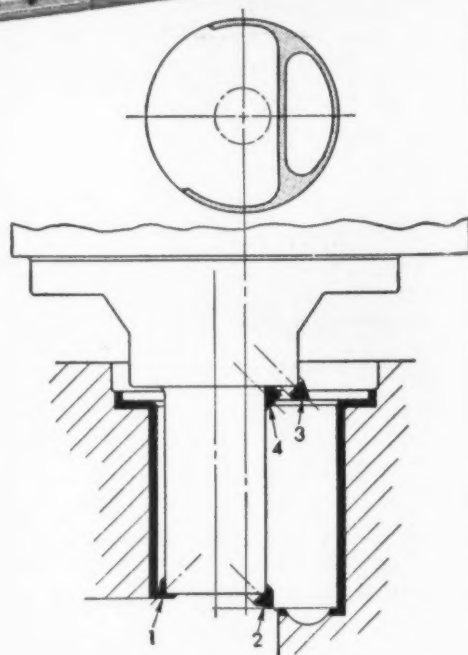


# SAVE TIME, INCREASE PRODUCTION

with **EX-CELL-O**  
**WAY MACHINES**



Right: Tool layout for roughing operations at the rear station. Tool 1 bores the hole as the table feeds forward to a positive stop. Then the cross-feed head moves across while tool 2 faces an area at the base of the bore and tool 3 faces the shoulder of the counterbore. As the cross-feed slide approaches the end of its stroke tool 4 chamfers the edge of the bore. The table then reverses in feed until tool 2 blends its cut with the bore produced by tool 1, and tool 3 bores the counterbore, after which both table and cross-feed head return to the start position. The upper drawing is a view looking into the hole. The circle in broken lines shows the path of tool 2 while tool 1 is boring. The shaded portion is the area faced by tool 2.



Ex-Cell-O Way Machines save time by working from 2, 3, or 4 directions simultaneously, holding accurate relationship between the various operations. Standard, self-contained way units can be rearranged for different work, using units individually or combined with others.

This Three-Way Precision Boring Machine uses three standard way units. The two side units perform conventional boring, plunge-facing and chamfering operations on holes approximately 3 inches in diameter. The rear station performs more complicated work requiring a cross-feed head (see drawing). The bore diameter at the rear station is 4 inches, and is held to limits of plus or minus .0005".

Ask your Ex-Cell-O representative for complete information.



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**CORPORATION**  
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AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS

# Record Steel Output Stirs Still-Hungry Consumers

**Operations scheduled at 106 pct of capacity for second week in row . . . Consumers all want steel right away . . . Inventories drastically unbalanced, by plants, products.**

Steelmakers are beating all previous production records, and they seem to be gearing up for even greater output.

This week the steel industry is scheduled to operate at 106 pct of rated capacity, the same as last week's record-shattering pace. Even higher operations are possible as more new steelmaking capacity continues to be brought into production.

Mills are turning out finished steel so fast that there are not enough freight cars available to carry it away. Early this week THE IRON AGE learned one mill in the Pittsburgh area had at least 10,000 tons of finished steel items awaiting shipment. Other mills are in pretty much the same boat, with the result that railroads serving mills in that area are under terrific pressure.

Spot shortages of freight cars hampered scrap flow in some areas.

**New Hope**—Encouraged by reports of high production, steel consumers are applying renewed pressure for early delivery. Everybody wants his steel right now—sooner if possible. Mills are trying to explain that no reasonable rate of production could satisfy pent up demands all at once.

This is undoubtedly true, but it is hard to explain to sheet users (for example) that deliveries can not be speeded. Before the strike sheets were easy, could be had on very short delivery. Now some consumers of sheets can't even find a home for their fourth quarter allocations. This means the earliest delivery possible would be next March, since fourth quarter orders have been extended to January and February.

Demand is also more intense for other major tonnage items such as heavy plates, bars, pipe and structurals.

**Short-Term Demand**—But nearly all consumer effort is aimed at relieving short-term supply deficiencies. Both consumers and producers still expect the steel market to start easing during the first quarter and to attain reasonable balance by the second quarter of next year.

Instead of acting to ease consumer pressure, this belief is intensifying it. There is special market advantage for manufacturers in attaining high production before steel again becomes abundant for all. A few consumers are using thinly veiled threats—that if mills hope to get their business when steel turns plentiful they had better deliver now. This is food for serious thought, but it is doubtful the mills can do much about this problem.

**Double Trouble**—For one thing they are still getting government directives which can delay other deliveries already promised and scheduled. Only last week THE IRON AGE learned National Production Authority ordered some conversion work off a mill to make way for a military order. A farm equipment order was pulled off and a shell program order put in its place. This, of course, meant a rescheduling and explaining job for the mill. Similar instances are not uncommon, but they are always tough to handle.

Despite current consumer pressure for delivery there are some indications that mills are adopting a cautious attitude toward the

probable market in 1953. Some producers are avoiding long-range commitments on steel scrap. One mill that previously had agreed to a six-month contract would renew only on a 30-day basis.

Mills also see supply safety in tall stockpiles.

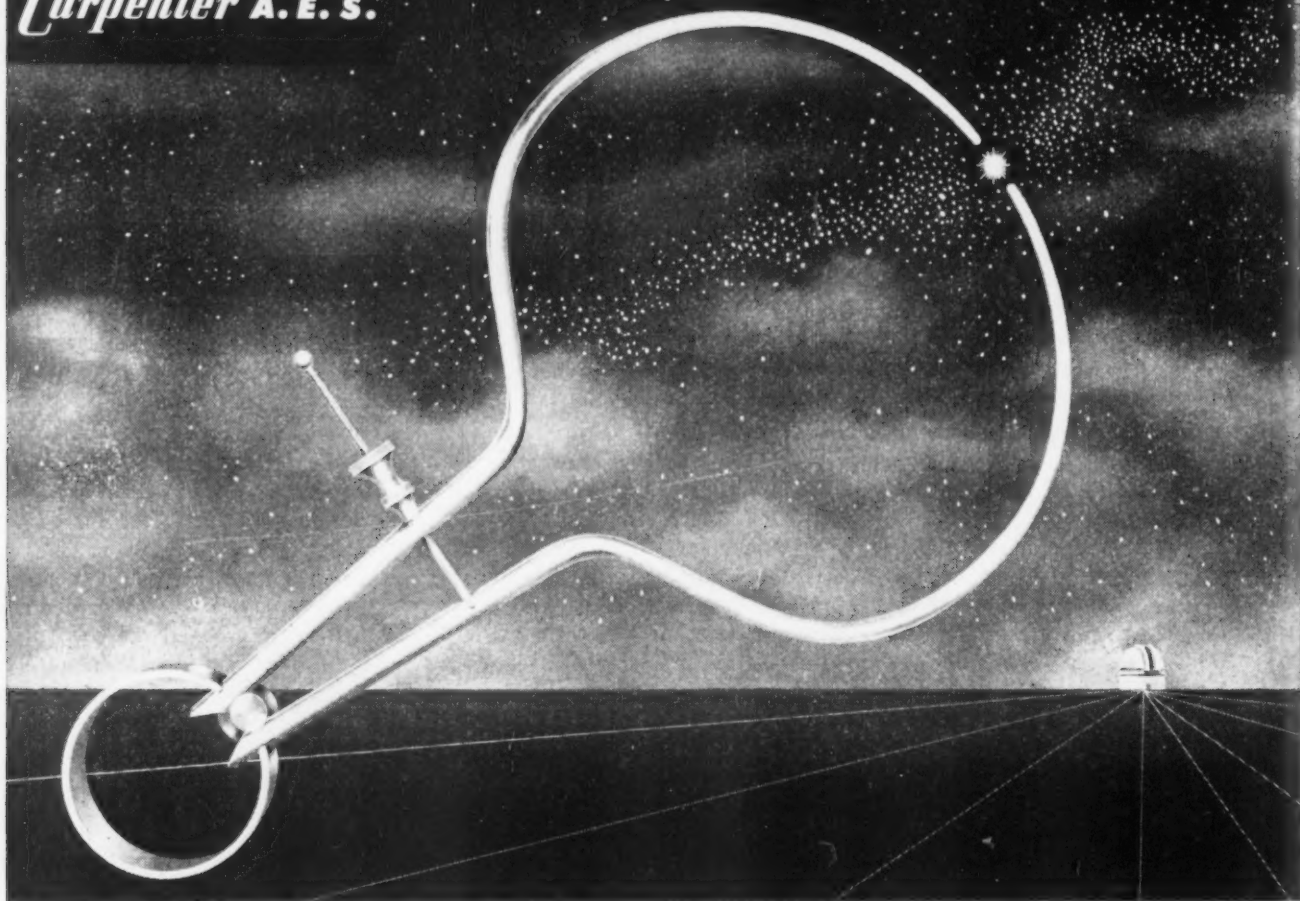
**Slow Death**—The conversion market may wither toward the end of the year, but it is not likely to die in December, as had been predicted. Some conversion rolling space is being wiped out as mills bring in new openhearth furnaces to balance production. In addition, at least two conversion mills overbooked in anticipation of cancellations. They still count on them, but reports from big conversion customers indicate they haven't lost their appetites for steel.

Steel items are not uniformly hard to get. Merchant wire products and nails are relatively easy. Light (strip mill) plates are in fair supply. Some specialty items, such as silicon sheets, are fairly easy. And light structurals and small shapes are coming back. Although these items are watched as tattle tales of easier supply, they do not make up a large portion of total steel production.

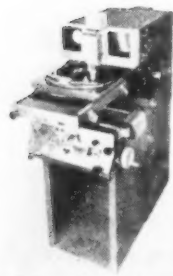
**Spotty Inventory**—Consumers' inventories are extremely spotty, ranging widely among plants and steel items. In a single plant you might find steel supply of different items ranging from hand-to-mouth to double the 30-day limit.

If sheet users expect model changeovers in Detroit to give them a chance to catch their breath, they are in for a rude surprise. Shutdowns for model changes will now occur periodically for the rest of the year. But, while each will ease the situation momentarily for the specific plant, production is geared so high that no overall easing can be expected.

**Carpenter A. E. S.\***



## Finding a Faster Way to Measure a Star



*Another example of how Carpenter  
\*Application Engineering Service  
is working for industry*

The giant 200-inch telescope at California's Mt. Palomar Observatory was picking up thousands of stars missed by other telescopes. But the job of measuring and coordinating the data revealed by the photographs was so big that astronomers couldn't keep abreast of it. Then the delicate astrophotometer

was developed and the problem was solved. The new device mechanically computes the size of a star in a fraction of the time trained astronomers could do it with former devices.

Naturally, such a precise instrument posed quite a few materials problems. One was the type of steel for the hardened ways on which the machine travels horizontally back and forth. Many different special steels were tried. All failed because

they couldn't meet the exacting straightness that was required.

Then, Carpenter Application Engineering Service was called in . . . and Carpenter Vega, a new air-hardening steel that shows practically no distortion in heat treatment was put to work. Used successfully for thousands of critical tool and die applications, Vega has proved to be the only steel found to stay straight enough in the 20" lengths of the ways. Are there applications in *your* plant where a steel providing this kind of performance could give your product extra competitive advantages?

Time and again, industry is finding new ways to save money and improve the salability of products with the help of Carpenter Application Engineering Service . . . a service that uses *imagination* to apply steels for best results. A.E.S. is yours to profit by when you do business with Carpenter. THE CARPENTER STEEL COMPANY, 121 W. Bern St., Reading, Pa.



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# STEEL

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## Market Briefs and Bulletins

**Warehouses**—Inquiries and sales at warehouse level continue at a high rate. Though warehouses continue to move steel items almost as fast as they come in, they are beginning to accumulate better stocks of light product lines such as small pipe, light structurals, sheets and strip. Warehouse activity reflects a high rate of manufacturing, as well as unbalanced inventories in consumers' hands. The number of urgent calls continues high.

**Can Prices**—Office of Price Stabilization told can manufacturers recently that it has compiled enough earnings data to issue a tailored order providing a percentage-factor price ceiling increase. It also stated manufacturers could pass along recent increases in tinplate costs. But some industry spokesmen said they would gain more from ceilings set by CPR 22, combined with a Capehart-type adjustment and pass-through of tinplate costs. The tailored order proposed by OPS would roll back some ceilings already established, they said.

**Small Business Aid**—National Production Authority will continue its small business hardship program for at least the remainder of 1952. Administrator Richard McDonald says third quarter requests for such help have fallen to a "very low" level, and that so far only a few cases are listed for the fourth quarter.

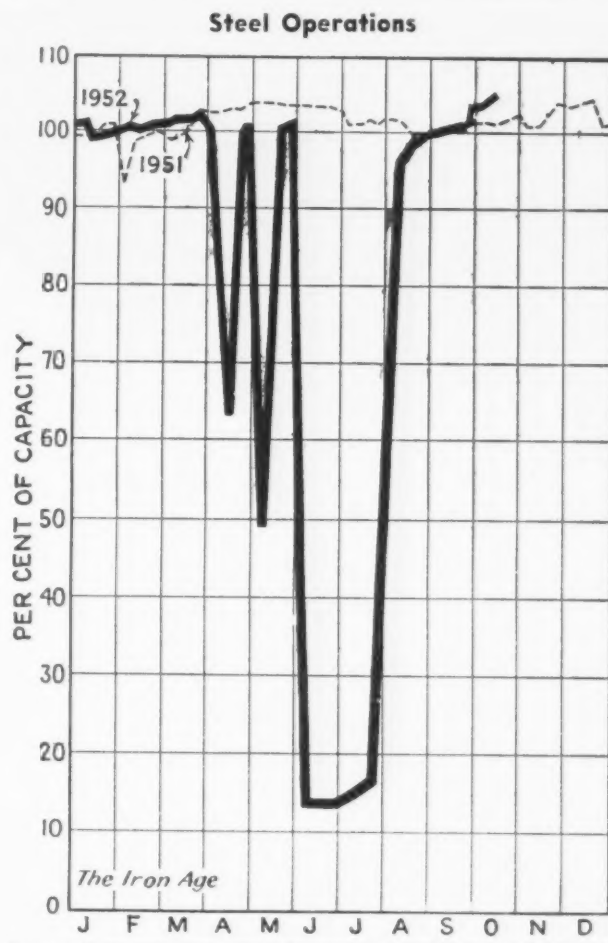
**Whip Snapped**—Communist Party's congress in Moscow was told that Soviet industrial production must increase 70 pct by 1955. Overall production this year was expected to be 230 pct higher than in 1940. Machinery and equipment alone were reported 300 pct higher. Anticipated production for 1952 includes 25 million tons of pig iron, 35 million tons of raw steel; 27 million tons of rolled steel and 300 million tons of coal.

**No Ceiling Prices**—Ceiling prices no longer have to be stated by defense contractors and subcontractors. Firms supplying services connected with defense-materials and suppliers of the materials need only certify that their prices are not in excess of ceilings. Authority for this OPS ruling is Amend 3, Rev. 1, General Overriding Reg. 2.

**Training Planes**—North American Aviation, Inc., will build an unnamed number of T-28B training planes for the Navy at its Downey, Calif., plant. The trainers are counterparts of the Air Force's T-28A but have more powerful engines and three-blade propellers.

**Iron Supply Solid**—Except for low phos grades, iron supply appears adequate. A foreign offer of pig iron for delivery early next year aroused little interest among Midwestern consumers. Only basis on which foreign pig would be bought today is if price is comparable with domestic level. The foreign offer was considerably in excess of this.

**Freight Cars Off**—Effects of the steel strike on freight car building hit hard in September. Builders were able to deliver only 3762 units, lowest monthly figure since July, 1950. New orders remained at a low level and just about balanced deliveries. Order backlog stands at 95,377.



**District Operating Rates—Per Cent of Capacity**

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Oct. 5 .....	108.0*	106.0	106.0*	100.0	107.0*	106.5*	108.0*	110.0*	99.0*	101.0	93.0	108.1	110.0*	106.6*
Oct. 12 .....	108.0	106.5	105.0	100.0	103.0	106.5	105.0	106.0	99.0	103.0	90.0	110.0	113.5	106.0

Beginning Jan. 1, 1952, operations are based on annual capacity of 108,587,670 net tons.  
\* Revised.

## Nonferrous Markets

### Price Cuts Don't Raise Demand

**Lead, zinc prices down, but customers stay leery . . . Drop in London lead prices pressure cuts here . . . May decline further . . . Dual zinc pricing ended—By R. L. Hatschek.**

Transatlantic doings were behind the sharp 1¢ drop in U. S. lead prices last week. Freeing of the London lead market lowered prices there, at one time as low as 13¢, New York delivery. Since U. S. producers were selling at 15.80¢, St. Louis, something had to give.

As a result, domestic consumers are suspicious of the whole market. Major sellers say they will try to keep lead at the present price of 14.80¢, but admit that if British prices stay at current levels of about 13<sup>5</sup>/<sub>8</sub>¢, the U. S. will have to follow suit. They stress their feeling that the London drop is exaggerated, however. But some trade sources aren't so sure. Some feel light demand will cut prices in any event.

**Government Aid**—Britain's Ministry of Supply is being rapped for helping to depress the lead market there. The government doesn't trade on the London Metal Exchange, but gladly makes after-market sales to British consumers. Prices in these deals are based on closing exchange figures. Thus, foreign producers charge, buyers do their best to depress prices on the exchange so they could buy cheaply from the government at a future time.

If this situation can be corrected,

there is a chance of British lead prices firming.

Low lead prices here could cut production and possibly tighten the labor supply at the mines. Miners' wages in the Midwest are tied to lead prices, and some miners have already lost as much as 25¢ per day as a result of the 1¢ drop. These are the first cuts under the sliding scale wage contract which allows pay cuts of 25¢ per day for each 1¢ drop in the price of lead.

**Zinc Drop**—The dual price market in zinc was eliminated last week when all producers dropped from 14¢ per lb to 13.5¢. This brought prices into line with the one established some 3 weeks ago by a custom smelter. But customers weren't interested even at the lower prices. Just to add to zinc producers' blues, increasing stocks of foreign metal were reported offered at cut prices. Some foreign zinc has been offered at under 13¢, trade sources have reported.

**Copper Talk** — Copper demand continued to exceed domestic supply. But consumers have not yet taken all the higher-priced foreign metal allocated for October.

The fouled-up price situation still bothers U. S. copper producers. A conference with Office of Price Stabilization officials will be prob-

ably called this week or next. The industry spokesmen will undoubtedly ask for removal of controls, but the real fight will come on the price differential between domestic and foreign metal.

**Aluminum Record**—A new post-war record in U. S. production of primary aluminum was set in August, according to Donald M. White, secretary of The Aluminum Assn. August output was 170,350,658 lb, 12.5 pct over July, and 15.5 pct over August 1951.

"The industry's building program continues to gain momentum," said Mr. White, "although at the present time production is being curtailed because of power shortages."

Canada, too, is boosting aluminum capacity. Output in the next 2 years will be upped almost one-third, and final goal will be more than half the present world total. Production last year was 890 million lb, about 25 pct of world output.

**Bigger Boost**—Producers of primary aluminum mill products should be allowed an 8 pct increase in ceilings instead of the 5 pct rise authorized by OPS in August, the agency has been told.

Spokesmen for primary aluminum producers said the 5 pct increase allowed by Supplementary Reg. 113, General Ceiling Price Reg., is insufficient in relation to the 1¢-per-lb rise in ceilings allowed for pig and ingot aluminum. Nonintegrated mill products manufacturers in particular are being squeezed by higher pig and ingot costs on one hand and greater expenses for labor and additional materials on the other.

This is contributing to a rickety profits structure.

Most mill products makers have cost data available to show the relationship of total production costs to the cost of pig and ingot. OPS said it intends to ask for this information for use in considering whether the percentage increase authorized should be greater.

#### NONFERROUS METAL PRICES

	Oct. 8	Oct. 9	Oct. 10	Oct. 11	Oct. 13	Oct. 14
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21 <sup>3</sup> / <sub>8</sub>	\$1.21 <sup>1</sup> / <sub>2</sub>	\$1.21 <sup>3</sup> / <sub>8</sub>	\$1.21 <sup>3</sup> / <sub>8</sub>	\$1.21 <sup>3</sup> / <sub>8</sub>	\$1.21 <sup>3</sup> / <sub>8</sub> *
Zinc, East St. Louis	13.50†	13.50	13.50	13.50	13.50	13.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Note: Quotations are going prices.

\*Tentative.

†Effective Oct. 7, 1952.



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## Nonferrous Prices

### MILL PRODUCTS

(Cents per lb, unless otherwise noted)

#### Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 31.6¢; 4S, 31.8¢; 6S, 35.8¢; 24S-O, 24S-OAL, 34.6¢; 75S-O, 75S-OAL, 41.9¢; 0.081 in., 2S, 26.8¢; 4S, 61S-O, 35.2¢; 52S, 37.4¢; 24S-O, 24S-OAL, 35.8¢; 75S-O, 75S-OAL, 43.9¢; 0.032 in., 2S, 3S, 34.6¢; 4S, 61S-O, 39.0¢; 52S, 41.8¢; 24S-O, 24S-OAL, 43.8¢; 75S-O, 75S-OAL, 54.8¢.

Plate 1/4 in. and heavier: 2S-F, 3S-F, 29.7¢; 4S-F, 31.7¢; 52S-F, 33.4¢; 61S-O, 32.3¢; 24S-O, 24S-OAL, 34.0¢; 75S-O, 75S-OAL, 40.7¢.

Extruded Solid Shapes: Shape factors 1 to 5, 35.5¢ to 77.2¢; 12 to 14, 36.2¢ to 93.5¢; 24 to 26, 38.7¢ to 112.2¢; 36 to 38, 45.9¢ to 17.7¢.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 39.4¢ to 35.2¢; cold-finished, 0.375 to 3 in., 2S-F, 3S-F, 42.5¢ to 36.8¢.

Screw Machine Stock: Rounds, 11S-Ts, 1/8 to 1 1/2 in., 66.2¢ to 44.1¢; 3/4 to 1 1/2 in., 43.6¢ to 41.0¢; 1 1/2 to 3 in., 40.4¢ to 37.8¢; 17S-Ts, 1.6¢ per lb. lower. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 41.6¢ to 30.5¢; 52S, 50.4 to 36.8¢; 56S, 53.5¢ to 44.1¢; 17S-T4, 56.7¢ to 39.4¢; 61S-T4, 50.9¢ to 38.9¢.

Extruded Tubing: Rounds, 63S-T5, OD in in., 1 1/4 to 2, 38.9¢ to 66.7¢; 2 to 4, 35.2¢ to 47.8¢; 4 to 6, 35.7¢ to 43.6¢; 6 to 9, 36.2¢ to 45.7¢.

Roofing Sheet: Flat, 0.019 in. x 28 in., per sheet, 72 in., \$1.199; 96 in., \$1.598; 120 in., \$1.997; 144 in., \$2.398; 0.24 in. x 28 in., 72 in., \$1.448; 96 in., \$1.931; 120 in., \$2.414; 144 in., \$2.897. Coiled sheet: 0.019 in. x 28 in., 26.6¢ per lb.; 0.024 in. x 28 in., 28.2¢ per lb.

#### Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FSI-O, 1/4 in., 63¢; 3/16 in., 65¢; 1/2 in., 67¢; R & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., 1/4 to 0.311 in., 74¢; 1/2 to 3/4 in., 57.5¢; 1 1/4 to 1.749 in., 53¢; 2 1/4 to 5 in., 48.5¢. Other alloys higher. Base up to 3/4 in. diam, 10,000 lb; 3/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, in weight per ft. for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.8¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/4 lb, 10,000 lb; 1/4 to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057; 1/4 in. to 5/16, \$1.40; 5/16 to 3/4, \$1.25; 3/4 to 1, \$1.10; 1 to 2 in., 76¢; 0.165 to 0.219, 5¢ to 3/4, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1 1/2 in., 10,000 lb; 1 1/2 in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

#### Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$8; Forgings, \$6.

#### Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60 1/2
Strip, cold-rolled	83	63 1/2
Rods and bars	73	58 1/2
Angles, hot-rolled	73	58 1/2
Plates	75	59 1/2
Seamless tubes	106	93 1/2
Shot and blocks		53 1/2

#### Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	45.52		45.12
Copper, h-r		41.37	
Copper, drawn		42.62	
Low brass	42.34	42.03	
Yellow brass	40.17	39.86	
Red brass	43.10	42.79	
Naval brass	44.72	38.78	40.04
Leaded brass			38.02
Com's bronze	44.39	44.08	
Mang. bronze	48.44	42.83	43.39
Phos. bronze	64.72	64.97	
Muntz metal	42.69	38.25	39.50
NI silver, 10 pct	51.96	54.18	

### PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed 20.00  
Aluminum pig 19.00  
Antimony, American, Laredo, Tex. 39.00  
Beryllium copper, 3.75-4.25% Be \$1.56  
Beryllium aluminum 5% Be, Dollars per lb contained Be \$69.50  
Bismuth, ton lots 22.25  
Cadmium, delf'd 22.00  
Cobalt, 97-99% (per lb) \$2.40 to \$2.47  
Copper, electro, Conn. Valley 24.50  
Copper, Lake, delivered 24.625  
Gold, U. S. Treas., dollars per oz. 35.00  
Indium, 99.8%, dollars per troy oz. 22.25  
Iridium, dollars per troy oz. 22.00  
Lead, St. Louis 14.80  
Lead, New York 16.00  
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb. 24.50  
Magnesium, sticks, 100 to 500 lb. 42.00 to 44.00  
Mercury, dollars per 76-lb flask, f.o.b. New York \$193 to \$195  
Nickel electro, f.o.b. N. Y. warehouse 59.58  
Nickel oxide sinter, at Copper Creek, Ont., contained nickel 52.75  
Palladium, dollars per troy oz. 324.00  
Platinum, dollars per troy oz. 990 to 993  
Silver, New York, cents per oz. 83.25  
Tin, New York \$1.21 3/4  
Titanium, sponge 55.00  
Zinc, East St. Louis 13.50  
Zinc, New York 14.58  
Zirconium copper, 50 pct 66.20

### REMELTED METALS

#### Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot  
No. 115 27.25  
No. 120 26.75  
No. 123 26.25  
80-10-10 ingot  
No. 305 33.00  
No. 315 30.50  
88-10-2 ingot  
No. 210 41.50  
No. 215 40.00  
No. 245 34.50  
Yellow ingot  
No. 405 23.25  
Manganese bronze  
No. 421 30.50

#### Aluminum Ingot

(Cents per lb, 100,000 lb and over)

95-5 aluminum-silicon alloys  
0.30 copper, max. 20.6  
0.60 copper, max. 20.4  
Piston alloys (No. 122 type) 20.5  
No. 12 alum. (No. 2 grade) 19.5  
108 alloy 20.6  
195 alloy 20.8  
13 alloy (0.60 copper max.) 20.8  
ASX-679 20.5

#### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2% 18.80  
Grade 2—92-95% 18.60  
Grade 3—90-92% 18.40  
Grade 4—85-90% 18.20

### ELECTROPLATING SUPPLIES

#### Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper  
Cast, oval, 15 in. or longer 37.84  
Electrodeposited 33 3/4  
Flat rolled 38.34  
Forged ball anodes 43  
Brass, 80-20  
Cast, oval, 15 in. or longer 34 3/4  
Zinc, oval 26 1/2  
Ball, anodes 25 1/2  
Nickel, 99 pct plus  
Cast 76.00  
Rolled, depolarized 77.00  
Cadmium 22.15  
Silver 999 fine, rolled, 100 oz lots, per troy oz., f.o.b. Bridgeport, Conn. 97 1/2

#### Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum 63  
Copper sulfate, 99.5 crystals, bbl. 12.85  
Nickel salts, single or double, 4-100 lb bags, frt. allowed 27 1/2  
Nickel chloride, 375 lb drum 27 1/2  
Silver cyanide, 100 oz lots, per oz. 67 1/4  
Sodium cyanide, 96 pct domestic 200 lb drums 19.25  
Zinc cyanide, 100 lb drum 47.7

### SCRAP METALS

#### Brass Mill Scrap

(Cents per pound, add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21 1/2	20 1/2
Yellow brass	19 1/2	17 1/2
Red brass	20 1/2	19 1/2
Comm. bronze	20 1/2	19 1/2
Mang. bronze	18 1/2	17 1/2
Brass rod ends	18 1/2	

#### Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25*
Radiators	14.75

\* Dry copper content.

#### Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	18.50
No. 1 comp. turnings	18.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	14.75

#### Aluminum

Mixed old cast	9	9 1/2
Mixed new clips	10	11
Mixed turnings, dry	9	9 1/2
Pots and pans	8 1/2	9

#### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

#### Copper and Brass

No. 1 heavy copper and wire	18 1/2—19 1/2
No. 2 heavy copper and wire	17 —17 1/2
Light copper	15 1/2—16
New type shell cuttings	15 1/2—16
Auto radiators (unsweated)	14
No. 1 composition	17 1/2—18
No. 1 composition turnings	17 —17 1/2
Unlined red car boxes	16 1/2—17
Cocks and faucets	15 —15 1/2
Mixed heavy yellow brass	11 1/2—12
Old rolled brass	14 1/2—15
Brass pipe	15 1/2—16
New soft brass clippings	16 —16 1/2
Brass rod ends	15 1/2—16
No. 1 brass rod turnings	15 —15 1/2

#### Aluminum

Alum. pistons and struts	6 1/2—7
Aluminum crankcases	7 1/2
2S aluminum clippings	10 1/2
Old sheet and utensils	7 1/2
Borings and turnings	5 —6
Misc. cast aluminum	7 1/2—8
Dural clips (24S)	7 1/2

#### Zinc

New zinc clippings	8 1/2—9
Old zinc	6 1/2—7
Zinc routings	3 1/2—4 1/2
Old die cast scrap	5 —5 1/2

#### Nickel and Monel

Pure nickel clippings	35 —36
Clean nickel turnings	35 —36
Nickel anodes	35 —36
Nickel rod ends	35 —36
New Monel clippings	28 —29
Clean Monel turnings	20 —21
Old sheet Monel	28 —29
Nickel silver clippings, mixed	13 —14
Nickel silver turnings, mixed	12 —13

#### Lead

Soft scrap, lead	12 1/4—13
Battery plates (dry)	6 1/2—7
Batteries, acid free	4 1/2

#### Magnesium

Segregated solids	15 —16
Castings	14 —15

#### Miscellaneous

Block tin	100
No. 1 pewter	70
No. 1 auto babbit	55 —60
Mixed common babbit	14 1/4—14 3/4
Solder joints	19 —20
Siphon tops	69
Small foundry type	19 —19 1/2
Monotype	15 1/2—16
Lino. and stereotype	13 1/2—14
Electrotype	12 —12 1/2
Hand picked type shells	9 1/2—10
Lino. and stereo. dross	7
Electro. dross	6 1/2



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It takes plenty of Brass to make a star. For stars must shine, and that takes light. But take Brass away, and she'd be dancing in the dark. Ask any stage electrician or Hollywood "top juicer" . . . he'll point out scores of unseen spots where *only Brass* can do the job that's being done so well. For that matter, look around your own home, from light bulbs to fuse box.

The reasons are not far to seek. *Only Brass* combines the qualities of relatively high conductivity, resilient strength, and almost endless service life. That's why in lighting, as in so many other fields of application, there is no substitute for the golden-

yellow alloy . . . cast, drawn and rolled as carefully as any precious metal . . . the way it's done here in the modern mills at Bristol. Now you may have a job, too, for which Brass is best, whether it's in electrical equipment or in costume jewelry. Want more light on this profit-laden possibility? Write:

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The BRISTOL BRASS CORPORATION, makers of Brass since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

*"Bristol-Fashion" means* **Brass at its Best**

# Iron and Steel Scrap Markets

## Scrap Flow Steady Despite Some Apathy

**There is no frenzy to get in the scrap but scrap traffic remains substantial . . . If consumer is indifferent blame it on heavy stockpile . . . Scarcity of scrap for dealers' stocks.**

Although consumers are not urging scrap men to break their necks to fill orders, enough sales are being made in most categories to make scrap movement substantial. If there is buying indifference, towering inventories in consumers' yards is seen as motivation.

In Pittsburgh, the market was reported dull—except for electric furnace grades and openhearth material. Some large mills are laying low as far as orders are concerned, content to work off some of the inventory fat they've put on. For the most part, scrap flow continues steady with ceiling prices being maintained and not immediately endangered.

The scarcity of scrap for preparation in dealers' yards is lingering. Some smaller yards not working near capacity see the approach of winter putting peddlers in hibernation and the situation worsening. Birmingham reports scrap yards are almost cleaned out of openhearth and blast furnace grades because of heavy buying pressure from the North. Detroit yards are squirming as collections stay sickly.

Pittsburgh — Mills generally are apathetic, and the market is dull. Exceptions are electric furnace shops which are pressing for deliveries to bolster fading inventories. Deliveries have been slowed by a shortage of freight cars in the district. Cast scrap continued to show weakness in the face of lagging demand but openhearth grades are still strong.

Chicago—Scrap movement was unchanged. There had been a number of rejections of electric furnace scrap over the week and demand for this grade was still rather slow. Cast continued poor, openhearth grades were moving at ceiling and moving well, and blast furnace grades were moving

slowly. As in electric furnace, there seemed to be some blast furnace material of poor quality that was practically unmovable.

Philadelphia—All the symptoms of a solid but not excited market continued here with no change in prices. Dealers were moving material as fast as they could get it and felt that they were not getting enough to process. Unstripped motor blocks showed no activity and generally cast grades coasted along. Although there was no buying push for turnings ceiling prices held and there were no signs of their slipping under.

New York — Ceiling prices for all grades except cast were steady in this area. The market was considered firm and seen continuing this way. Buying is steady but there is no great enthusiasm. Reports of freight car shortages continued. Dealers could use more scrap to process. This shortage on the dealer level is reported especially severe in the South. Cast buyers have trouble in buying much below ceiling.

Detroit—Scrap picture here has two sides. Industrial scrap is moving rapidly and enjoying a strong market. Yards are suffering from poor collections, a situation that may be aggravated by colder weather. Steelmaking grades continue strong and any noticeable weaknesses in blast furnace grades have not affected ceiling prices. Dealers are showing concern over inability to add to inventories.

Cleveland—Market is firm but some mills are holding up shipments. Feeling prevails that consumers with well stocked inventories will be content to draw on reserves at least until the first of the year. Cast scrap is still at ceiling, although dealers are finding it increasingly hard to move. Consumers in the cast market continue to limit springboards. Demand for electric furnace grades remains brisk. Scrap shipments from southwest may brighten lean yard picture.

St. Louis—Shipments of scrap from the country continue to taper off and receipts in the industrial district are low. Steel mills are eating daily into their inventories which are large. Not much buying is expected before Nov. 1. Because of the steel strike railroads are estimated 90 days behind in their shop operations resulting in a thinning out of railroad lists. Some improvement is expected shortly in the cast iron situation.

Birmingham—Scrap yards are just about cleaned out of openhearth and blast furnace grades, most of which have gone North in the last 30 days to one large consumer. Another large northern buyer came into the market this week and brokers were scurrying around to fill orders. Only one mill in the area is buying now, principally No. 2 bundles. Calls for electric furnace grades have eased off. One of the large purchasers of cast in the district, who was paying a premium for shipments from west of the Mississippi, has filled its needs and withdrawn its price for distant tonnage. Some cast continues to move throughout the district at fairly steady prices.

Cincinnati—Scrap is moving at a steady pace here but dealers say there is room for general market improvement. Widespread weakness in cast scrap is reflected by more rigid foundry inspection and scarcity of markets. Openhearth grades and low phos are in good demand. There is very little scrap coming into the area and yards are practically bare.

Boston—Scrap grades are moving well at ceiling. Cast grades are still somewhat under ceiling but are holding. Heavy breakable cast moved up \$2 per ton.

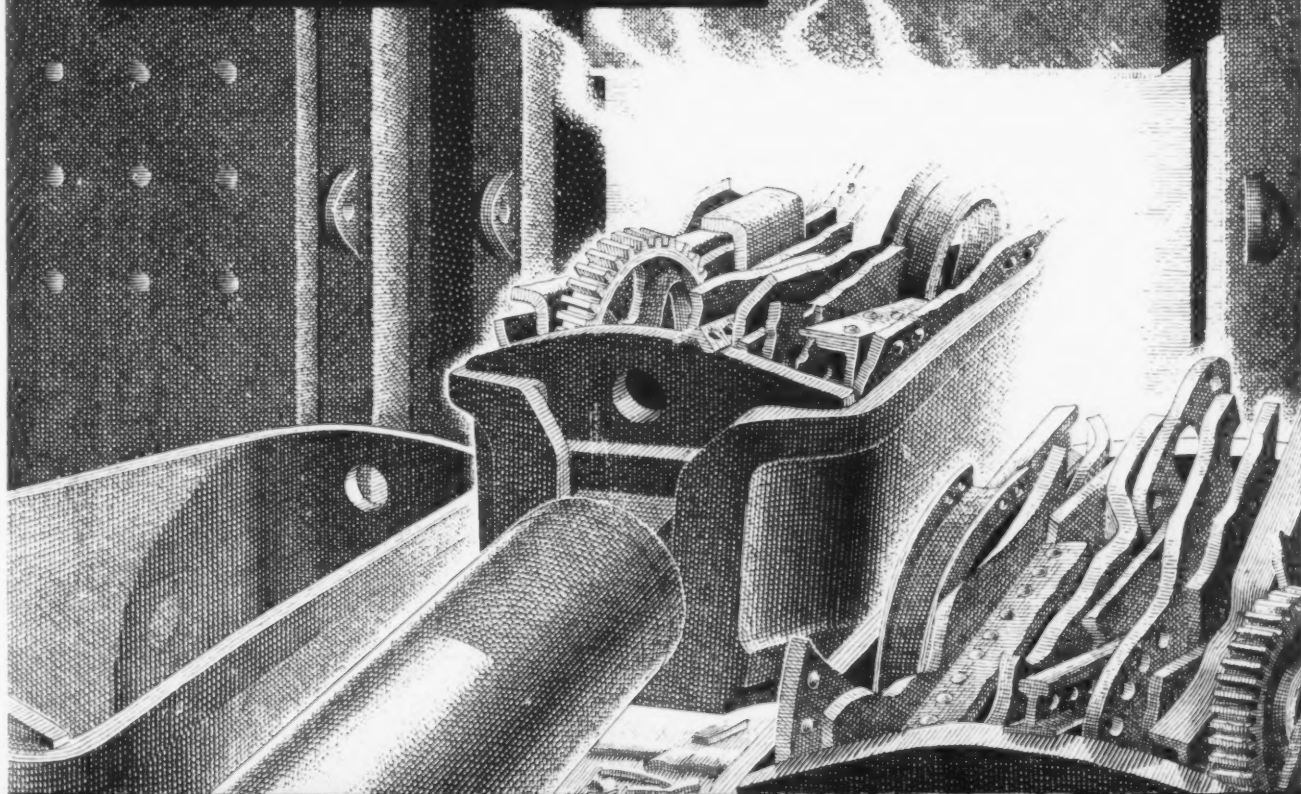
Buffalo—A continuation of an embargo on shipments at one of three leading mill consumers came as a surprise to dealers. Embargo has now been in effect the last 3 weeks. The mill's unloading facilities are tied up by influx of ore. Expected strength in cast failed to develop when one of the area's top buyers again made purchases at under ceiling.

West Coast — Scrap volume remained about normal last week with no price changes. Although dealing below ceiling in most grades there apparently are few candidates for "distress permits" for export to Mexico.



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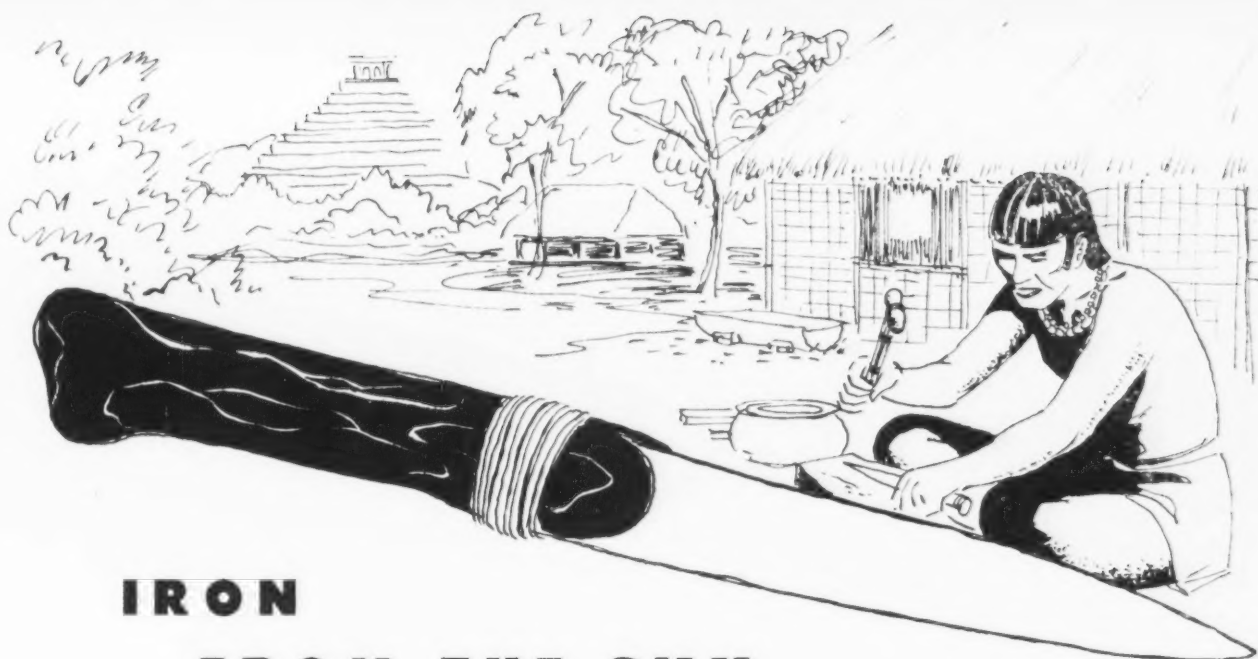


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SEATTLE, WASH.

**LEADERS IN IRON AND STEEL SCRAP SINCE 1889**

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments.

No. 1 hvy. melting .....	\$35.50
No. 1 bundles .....	35.50
No. 2 bundles .....	35.00
Mechanical bundles .....	33.50
Mixed steel scrap .....	31.50
Mixed borings, turnings .....	32.50
Rails, remelting .....	35.50
Rails, rerolling .....	40.50
Bushelings .....	34.00
Bush, new fact. prep'd .....	33.50
Bush, new fact. unprep'd .....	32.50
Short steel turnings .....	32.50
Cast scrap .....	50.00



## IRON FROM THE SKY

Sometime during unrecorded history a meteoric mass, weighing  
fifty tons, fell to earth at Bacubirito in Mexico . . . And long before  
the white man established settlements in North America, the Aztecs  
had developed an unusual skill in using iron from such meteorites to  
fashion their knives, daggers and other instruments.

To the Aztecs, this "scrap" was important for tools of war and tools  
of peace . . . for our industrial and military uses of the 20th Century,  
an unfailing supply of scrap in millions of tons is urgently needed.

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## Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Oct. 14 1952	Oct. 7 1952	Sept. 16 1952	Oct. 16 1951
<b>Flat-Rolled Steel: (per pound)</b>				
Hot-rolled sheets	3.775e	3.775e	3.775e	3.60e
Cold-rolled sheets	4.575	4.575	4.575	4.35
Galvanized sheets (10 ga.)	6.075	6.075	6.075	4.80
Hot-rolled strip	3.725	3.725	3.725	3.50
Cold-rolled strip	6.20	6.20	6.20	4.75
Plate	3.90	3.90	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Strains C-R strip (No. 302)	36.75†	36.75†	36.75†	36.75

<b>Tin and Terneplate: (per base box)</b>				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternes	7.75	7.75	7.75	7.50

<b>Bars and shapes: (per pound)</b>				
Merchant bars	3.95e	3.95e	3.95e	3.70e
Cold finished bars	4.925	4.925	4.925	4.55
Alloy bars	4.675	4.675	4.675	4.30
Structural shapes	3.85	3.85	3.85	3.65
Stainless bars (No. 302)	31.50†	31.50†	31.50†	31.50
Wrought iron bars	10.05	10.05	10.05	9.50

<b>Wire: (per pound)</b>				
Bright wire	5.225e	5.225e	5.225e	4.85e

<b>Rails: (per 100 lb)</b>				
Heavy rails	\$3.775	\$3.775	\$3.775	\$3.60
Light rails	4.25	4.25	4.25	4.00

<b>Semifinished Steel: (per net ton)</b>				
Re-rolling billets	\$59.00	\$59.00	\$59.00	\$56.00
Slabs re-rolling	59.00	59.00	59.00	56.00
Forging billets	70.50	70.50	70.50	66.00
Alloy blooms, billets, slabs	76.00	76.00	76.00	70.00

<b>Wire Rod and Skelp: (per pound)</b>				
Wire rods	4.325e	4.325e	4.325e	4.10e
Skelp	3.55	3.55	3.55	3.35

† Add 4.7 pct.

<b>Composite: (per pound)</b>				
Finished steel base price	4.376e	4.376e	4.376e	4.131e

	Oct. 14 1952	Oct. 6 1952	Sept. 16 1952	Oct. 16 1951
<b>Pig Iron: (per gross ton)</b>				
Foundry, del'd Phila.	\$60.69	\$60.69	\$60.69	\$57.97
Foundry, Valley	55.00	55.00	55.00	52.50
Foundry, Southern, Cin'ti	58.93	58.93	58.93	55.58
Foundry, Birmingham	51.38	51.38	51.38	48.88
Foundry, Chicago†	55.00	55.00	55.00	52.50
Basic del'd Philadelphia	59.77	59.77	59.77	57.09
Basic, Valley furnace	54.50	54.50	54.50	52.00
Malleable, Chicago†	55.00	55.00	55.00	52.50
Malleable, Valley	55.00	55.00	55.00	52.50
Charcoal, Chicago	78.34	78.34	78.34	70.56
Ferromanganese	226.25	226.25	226.25	186.25

† The switching charges for delivery to foundries in the Chicago district is \$1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy pages.

<b>Composite: (per gross ton)</b>				
Pig iron	\$55.26	\$55.26	\$55.26	\$52.72

<b>Scrap: (per gross ton)</b>				
No. 1 steel, Pittsburgh	\$43.00*	\$43.00*	\$43.00*	\$44.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	42.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	42.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos., Youngstown	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	49.00†
No. 1 cast, Philadelphia	47.50	47.50	47.50	49.00†
No. 1 cast, Chicago	44.50	45.50	45.50	49.00†

\* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

<b>Composite: (per gross ton)</b>				
No. 1 heavy melting scrap	\$42.00	\$42.00	\$42.00	\$43.00

<b>Coke, Connellsville: (per net ton at oven)</b>				
Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75

<b>Nonferrous Metals: (cents per pound to large buyers)</b>				
Copper, electrolytic, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21½	\$1.21½	\$1.21½	\$1.08
Zinc, East St. Louis	13.50	13.75	14.00	19.50
Lead, St. Louis	14.80	15.80	15.80	18.80
Aluminum, virgin ingot	20.00	20.00	20.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	59.58
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	39.00	39.00	39.00	42.00

## Composite Price Notes

### Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

### Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

### Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

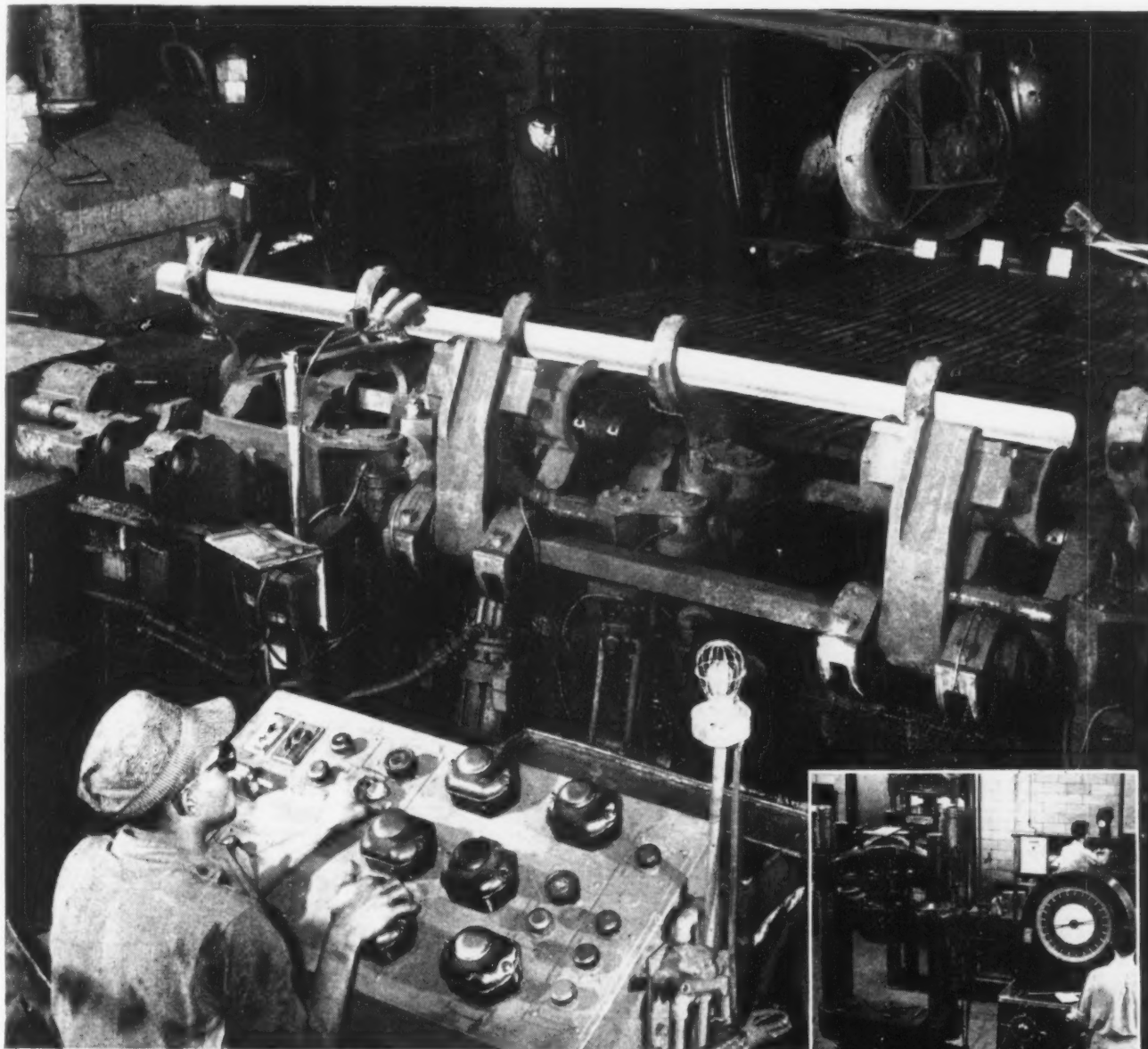
## Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1) 500 to 1499 lb. (2) 1500 to 3199 lb. (3) 6000 lb or over, (4) 450 to 1499 lb.

WARE HOUSES		Base price, f.o.b., dollars per 100 lb.											
		Sheets			Strip		Plates Shapes		Bars		Alloy Bars		
		Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled	Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed
Cities	City Delivery Charge												
Baltimore	\$.20	5.81	7.17	8.42	6.42		6.30	6.47	6.41	7.18			
Birmingham	.15	5.80	6.65	7.70	5.80		6.47	6.71	7.43				
Boston	.20	6.48	7.35	8.59	6.55	8.50†	6.75	6.56	6.38	7.10	10.78	11.15	13.18
Buffalo	.20	6.52	7.52	8.74	6.16		6.80	6.75	6.54	7.63	11.18		
Chicago	.20	5.76	6.60	8.40	6.19		6.26	5.96	5.76	6.90	10.70	11.00	12.51
Cincinnati	.15	5.80	6.65	8.46	6.21		6.37	6.08	5.90	6.95	11.07	12.70	14.42
Cleveland	.20	5.80	6.65	8.05	5.83		5.95	5.95	5.83	6.36	10.65		12.65
Detroit	.20	5.81	6.72	8.52	6.21		6.00	6.98	6.92				
Denver	.20	6.13	6.72	8.52	6.21		6.47	6.42	6.13	7.16	11.07		13.07
Indianapolis	.20	5.80	6.65	8.16	6.00		6.12	6.28	5.89	6.66			
Kansas City	.20	5.81	6.65	8.19	6.01		6.22	6.33	6.98		10.79		12.79
Los Angeles	.20	7.17		7.43	8.90		7.37	7.50	7.61	8.24			
Memphis	.10	6.00	6.81	8.34	6.13	7.99	6.45	6.12	6.12	6.975	10.72	10.92	12.72
Milwaukee	.20	6.07	6.92		6.13		6.47	6.45	6.30	7.21			
New Orleans	.15	6.74	7.78	8.68	6.61	9.80	6.63	6.66	6.82	9.00	11.90	11.90	13.90
New York	.30	6.79	7.79		6.75		7.07	6.79	6.98	9.62			
Philadelphia	.25	6.47	7.31	8.50	6.51	8.07	6.62	6.62	6.50	7.57	11.15	11.45	13.13
Pittsburgh	.20	6.60	8.45	9.80	6.74	9.15	6.67	6.66	6.60	8.36	11.90	12.20	13.88
Portland	.20	6.60	8.49	10.60	6.78		6.71	6.64	6.62	8.69	12.05		14.60
San Francisco	.15	6.56			6.60		6.71	6.71	6.57	7.98			
Seattle	.20	5.97	6.82	8.22	6.00		6.12	6.12	6.00	6.83	10.82		12.82
St. Louis	.20	5.98			6.01		6.17			7.07			
St. Paul	.15	6.28	7.12		6.32		6.43	6.43	6.31	7.85			
Valley	.20	6.26	7.27	8.31	6.56	9.53	6.60	6.39	6.59	7.53	10.74	11.04	12.74
Youngstown	.20	6.69	7.60	8.68	7.05		7.19	6.70	6.89	8.05	10.98	11.28	12.97
		7.10			6.81		6.64	7.25	6.44	8.45			13.27
		6.11	7.13	8.35	6.45		6.24	6.17	6.42	7.45	10.57	10.79	12.79
		6.38	7.92	8.79	7.45		6.86	6.42	6.68	7.69		11.02	
		5.80	6.65	8.05	5.94		5.95	5.95	5.83	6.66		10.65	12.65
		5.81		8.45	5.97		6.00			6.90			
		7.60	9.00	10.25	7.60		7.30	7.30	7.35	9.45			
		7.90	9.45		7.65								
		8.30		10.90	8.45		7.85	8.00	8.40				
		6.80	8.23	9.70	6.79	9.25	7.10	6.70	6.65	8.40		11.85	14.40
		6.90		10.40	6.90	9.70		6.79	6.70	8.70			
		7.46	8.46	9.60	7.39		7.19	6.91	7.22	9.37			
		6.10	6.95	8.35	6.14	9.73	6.35	6.35	6.13	6.96	10.65	10.95	12.65
		6.30	7.83	8.39			6.60		6.33	7.40			12.95
		6.47	7.31	8.71	6.50		6.61	6.61	6.49	7.32			

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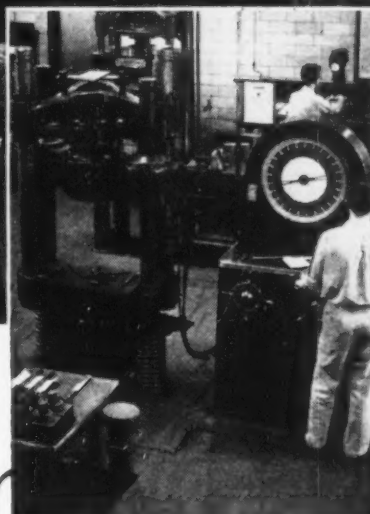
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- sistant Steels • Alloy Steels • Carbon
- Steel • High-Temperature Service Steels •
- Standard and Special Analysis Steels •
- Mechanical and Pressure Tubing

**STEEL  
PRICES**

	INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL- ING	SHAPES STRUCTURALS		STRIP			
	Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.				\$76.00 B3			3.90 B3	5.80 B3				
	Buffalo, N. Y.		\$59.00 B3	\$70.50 B3, R3	\$76.00 B3, R3		4.675 B3	3.90 B3	5.80 B3	3.725 B3, R3	5.10 B3	5.70 B3	7.90 B3
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.			\$77.50 A2	\$83.00 A2					4.125 A2		5.90 A2	
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.		\$59.00 B3	\$70.50 B3	\$76.00 B3			3.90 B3	5.80 B3	3.725 B3			
	Newark, N. J.												
	New Haven, Conn.										5.60 A5 5.85 D1		
	Phoenixville, Pa.							6.10 P2					
	Putnam, Conn.												
	Sparrows Pt., Md.									3.725 B3	5.10 B3	5.70 B3	7.90 B3
	Worcester, Mass.												
	Trenton, N. J.										6.45 R4		
MIDDLE WEST	Alton, Ill.									4.20 L1			
	Ashland, Ky.									3.725 A7			
	Canton-Massillon, Ohio			\$70.50 R3	\$76.00 R3 \$78.60 T5								
	Chicago, Sterling, Ill.		\$59.00 U1	\$70.50 U1, R3, W8	\$76.00 U1, R3, W8		4.675 U1	3.85 U1, W8	5.80 U1	3.725 A1, W8 4.725 N4	5.35 A1		
	Cleveland, Ohio			\$70.50 R3							5.10 A5, J3		7.45 J3
	Detroit, Mich.	\$56.00 R5	\$57.00 R5	\$73.50 R5	\$79.00 R5					4.025 G3 4.40 M2	5.30 G3 5.45 M2 5.60 D1 6.05 D2	6.30 G3	8.15 G3
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana		\$59.00 U1	\$70.50 U1	\$76.00 U1, Y1		4.675 I3	3.85 I3, U1	5.80 I3, U1 6.30 Y1	3.725 I3, U1, Y1	5.35 I3	5.65 I3, U1 6.15 Y1	
	Granite City, Ill.												
	Kokomo, Ind.												
	Middletown, Ohio										5.10 A7		
	Niles, Ohio Sharon, Pa.									4.225 S1	5.80 S1	5.65 S1	7.30 S1
	Pittsburgh, Pa.	\$54.00 U1	\$57.00 U1	\$59.00 U1, J3	\$70.50 U1, J3	\$76.00 U1	3.55 U1 3.65 J3	4.675 U1	3.85 U1, J3	5.80 U1, J3	3.725 J3, A7 3.975 A3* 4.225 S7, S9	5.10 J3, A7 5.45 A3 5.80 B4, S7	
	Portsmouth, Ohio												
	Weirton, Wheeling, Follansbee, W. Va.							4.10 W3		3.825 W3	5.10 W3	6.10 W3	7.95 W3
	Youngstown, Ohio				\$76.00 Y1, C10	3.55 U1, R3			6.30 Y1	3.725 U1, Y1, R3	5.10 R3, Y1 5.70 C5 5.80 B4	5.65 R3, U1 6.15 Y1	7.30 R3 7.80 Y1
WEST	Fontana, Cal.	\$81.00 K1	\$83.00 K1	\$78.00 K1	\$89.50 K1	\$95.00 K1		4.45 K1	6.40 K1	4.975 K1	6.75 K1	6.55 K1	
	Geneva, Utah				\$70.50 C7			3.85 C7	5.80 C7				
	Kansas City, Mo.							4.45 S2		4.325 S2			
	Los Angeles, Torrance, Cal.				\$89.50 B2	\$96.00 B2		4.45 C7, B2	6.35 B2	4.475 C7, B2	6.85 C1	6.40 B2	
	Minnequa, Colo.							4.30 C6		4.775 C6			
	San Francisco, Niles, Pittsburg, Cal.				\$89.50 B2			4.40 B2 4.56 P9	6.30 B2	4.475 C7, B2		6.40 B2	
	Seattle, Wash.				\$89.50 B2			4.50 B2	6.40 B2	4.725 B2		6.65 B2	
	Atlanta, Ga.									4.275 A8			
SOUTH	Birmingham, Ala. Alabama City, Ala.		\$59.00 T2	\$70.50 T2				3.85 T2, R3	5.80 T2	3.725 T2, R3			
	Houston, Texas		\$65.00 S2	\$78.50 S2	\$84.00 S2			4.25 S2		4.125 S2			



Italics identify producers listed in key at end of table. Base prices, End. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	STEEL PRICES
Hot-rolled 18 ga. hvyt.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25 lb. base box	Hollowware Enameling 29 ga.	
													Bethlehem, Pa.
3.775 B3	4.575 B3				5.675 B3	6.925 B3							Buffalo, N. Y.
													Claymont, Del.
													Coatesville, Pa.
4.175 A2					5.925 A2								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.325 B3				Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
													Putnam, Conn.
3.775 B3	4.575 B3	5.075 B3			5.675 B3	6.925 B3	7.775 B3		4.425 B3	\$8.80 B3	\$7.50 B3		Sparrows Pt., Md.
									4.625 A5				Worcester, Mass.
									4.425 R4				Trenton, N. J.
									4.70 L1				Alton, Ill.
3.775 A7		5.075 A7	4.925 A7										Ashland, Ky.
		5.075 R3											Canton-Massillon, Ohio
3.775 W8					5.675 U1				4.325 A5, N4, R3				Chicago, Sterling, Ill.
3.775 R3, J3	4.575 R3, J3		4.925 R3		5.675 R3, J3	6.925 R3, J3			4.325 A5				Cleveland, Ohio
3.975 G3	4.775 G3				6.225 G3	7.475 G3							Detroit, Mich.
													Duluth, Minn.
3.775 I3, U1, Y1	4.575 I3, U1, Y1	5.075 I3, U1	4.925 U1	5.475 U1	5.675 I3, U1 6.175 Y1	6.925 I3, U1 7.425 Y1			4.325 Y1	\$8.70 U1, I3, Y1	\$7.40 U1, I3	6.10 U1, Y1	Gary Ind. Harbor, Indiana
4.30 G2	5.275 G2	5.50 G2	5.625 G2								\$7.60 G2	6.30 G2	Granite City, Ill.
		5.475 C9											Kokomo, Ind.
	4.575 A7		4.925 A7	5.475 A7									Middletown, Ohio
4.175 S1					5.675 S1						\$7.40 R3		Niles, Ohio Sharon, Pa.
3.775 U1, J3, A7 3.925 A3	4.575 U1, J3, A7	5.075 U1	4.925 U1		5.675 U1, J3	6.925 U1, J3	7.625 U1		4.325 A5	\$8.70 U1, J3	\$7.40 U1, J3	6.10 U1	Pittsburgh, Pa.
									4.525 P7				Portsmouth, Ohio
3.775 W3, W5	4.575 W3, W5	5.075 W3, W5		5.475 W3, W5	6.025 W3	7.275 W3				\$8.70 W3, W5	\$7.40 W3, W5	6.35 W5	Weirton Wheeling, Follansbee, W. Va.
3.775 U1, R3, Y1	4.575 R3, Y1	5.775 R1	4.925 Y1	6.05 E2	5.675 R3, U1 6.175 Y1	6.925 R3 7.425 Y1	5.65 E2 5.825 R1		4.325 Y1	\$8.70 R3			Youngstown, Ohio
4.725 K1	5.525 K1				6.625 K1	7.875 K1			5.125 K1				Fontana, Cal.
3.875 C7													Geneva, Utah
													Kansas City, Mo.
4.475 C7		5.825 C7					5.575 C7		5.125 C7, B2				Los Angeles, Torrance, Cal.
									4.575 C6				Minnequa, Colo.
4.475 C7	5.525 C7	5.825 C7							4.975 C7	\$9.45 C7	\$8.15 C7		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.775 T2, R3	4.575 T2	5.075 T2, R3			5.675 T2			4.925 R3	4.325 T2, R3	\$8.80 T2	\$7.50 T2		Birmingham, Ala. Alabama City, Ala.
									4.725 S2				Houston, Tex.

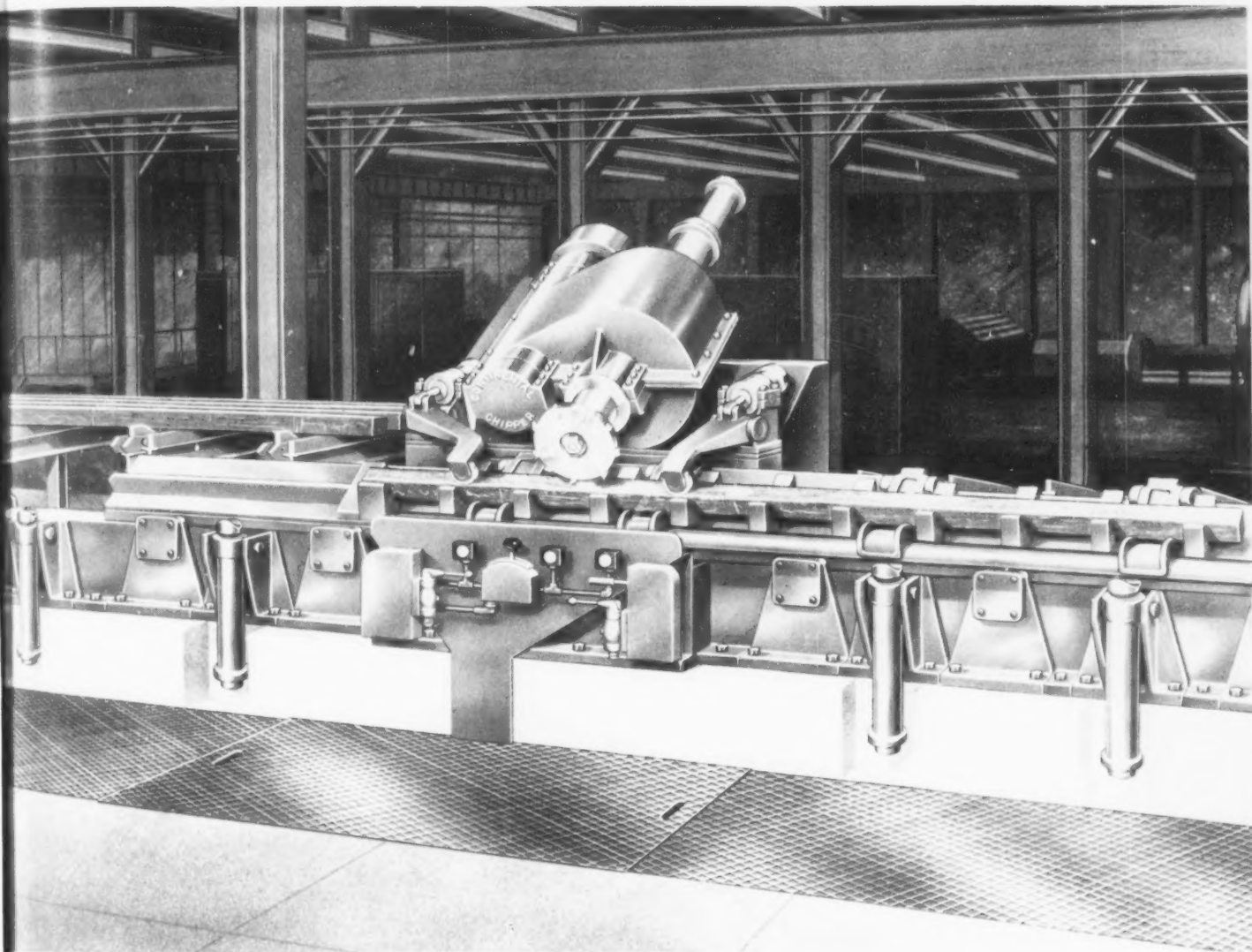
**STEEL  
PRICES**

	BARS						PLATES				WIRE
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Migr's Bright
EAST	Bethlehem Pa.			4.675 B3	6.00 B3	5.925 B3					
	Buffalo N. Y.	3.95 B3,R3	3.95 B3,R3	4.975 B5	4.675 B3,R3	6.00 B3,B5	5.925 B3	3.90 B3		5.95 B3	
	Claymont Del.						4.35 C4		5.35 C4		
	Coatesville Pa.						4.35 L4		5.75 L4		
	Conschocken Pa.						4.35 A2	4.95 A2		6.20 A2	
	Harrisburg Pa.						6.50 C3	6.50 C3			
	Hartford Conn.			5.475 R3		6.45 R3					
	Johnstown Pa.	3.95 B3	3.95 B3		4.675 B3	5.925 B3	3.90 B3		5.25 B3	5.95 B3	5.225 B3
	Newark N. J.			5.375 W10		6.35 W10					
	New Haven Conn.										
	Phoenixville Pa.										
	Putnam Conn.			5.475 W10							
	Sparrows Pt. Md.		3.95 B3				3.90 B3		5.25 B3	5.95 B3	5.325 B3
	Worcester Mass.				6.35 A5						5.525 A5
	Tranton N. J.										
MIDDLE WEST	Alton Ill.	4.50 L1									5.45 L1
	Ashland Ky.						3.90 A7				
	Canton-Massillon	3.95 R3		4.925 R2,R3	4.675 R3 4.72 T5	5.99 T5 6.00 R2,R3					
	Chicago Sterling Ill.	3.95 U,W8, R3, 4.55 N4	3.95 R3 4.70 N4	4.925 A5,B5, W8,W10	4.675 R3 U1, W8	6.00 B5,L2, R3,W8,W10 6.05 A5	3.90 U1, W8	4.95 U1	5.25 U1	5.95 U1	5.225 A3, N4,R3 5.325 R2 5.475 W7
	Cleveland Ohio	3.95 R3	3.95 R3	4.925 A5,C13		6.00 C13 6.05 A5	5.925 R3	3.90 R3,J3	4.95 J3	5.95 R3,J3	5.225 A5, C13,R3
	Detroit Mich.	4.10 R5 4.30 G3		5.075 R5,P8 5.175 P3	4.825 R5 5.025 G3	6.15 R5,P8 6.20 P3	6.675 G3	4.45 G3		6.90 G3	
	Duluth Minn.										5.252 A5
	Gary Ind. Harbor Indiana	3.95 I3, U1, Y1	3.95 I3, U1, Y1	4.925 L2, M5,R3	4.675 I3, U1, Y1	6.90 L2,M5, R3,R5	5.925 I3, U1, 6.425 Y1	3.90 I3, U1, Y1	4.95 I3	5.25 U1	5.95 I3, U1 6.45 Y1
	Granite City Ill.							4.60 G2			
	Kokomo Ind.										5.325 C9
	Middletown Ohio										
	Niles Ohio Sharon Pa.						4.15 S1		5.70 S1	5.95 S1	
	Pittsburgh Pa.	3.95 U1,J3	3.95 U1,J3	4.925 A5,J3, W10,R3,C8	4.675 U1,J3	6.00 W10,C8 6.05 A5	5.925 U1,J3	3.90 U1,J3	4.95 U1,J3	5.25 U1,J3	5.95 U1,J3 5.225 A5, J3
	Portsmouth Ohio										5.625 P7
	Weirton Wheeling Fellansbee W. Va.	4.10 W3						3.90 W5 4.20 W3			
	Youngstown Ohio	3.95 U1, Y1, R3	3.95 U1, Y1, R3	4.925 Y1	4.675 U1,C10, Y1	6.00 C10, Y1	5.925 U1 6.425 Y1	3.90 U1, Y1, R3		5.95 R3 6.45 Y1	5.225 Y1
WEST	Fontana Cal.	4.65 K1	4.65 K1		5.725 K1		6.975 K1	4.50 K1		6.20 K1	6.55 K1
	Geneva Utah							3.90 C7		5.95 C7	
	Kansas City Mo.	4.55 S2	4.55 S2		5.275 S2						5.825 S1
	Los Angeles Torrance Cal.	4.65 C7,B2	4.65 C7,B2	6.375 R3	5.725 B2		6.625 B2				6.175 C7,B1
	Minnequa Colo.	4.40 C6	4.75 C6					4.70 C6			5.475 C6
	San Francisco Niles Pittsburg Cal.	4.65 C7,P9 4.70 B2	4.65 C7,P9 4.70 B2				6.675 B2				6.175 C6,C7
	Seattle Wash.	4.70 B2	4.70 B2				6.675 B2	4.80 B2		6.85 B2	
	Atlanta Ga.	4.50 A8	4.50 A8								5.475 A8
SOUTH	Birmingham Ala. Alabama City Ala.	3.95 T2,R3	3.95 T2,R3			5.925 T2	3.90 T2,R3			5.95 T2	5.225 T2 R3
	Houston Tex.	4.35 S2	4.35 S2		5.075 S2			4.30 S2			5.625 S2

Turn Page

# CONTINENTAL CHIPPER

## MECHANICAL CHIPPING AND CONDITIONING



### Complete Rolling Mill Installations:

BLOOMING MILLS • STRUCTURAL MILLS • RAIL MILLS  
 BILLET MILLS • ROD MILLS  
 BAR MILLS • MERCHANT MILLS • SLABBING MILLS  
 UNIVERSAL MILLS • PLATE MILLS  
 HOT STRIP MILLS • COLD STRIP MILLS • TEMPER MILLS  
 ROLL LATHES • SPECIAL MACHINERY

**CASTINGS** carbon and alloy steel  
 from 20 to 250,000 pounds

**ROLLS** iron, alloy iron and steel  
 rolls for all types of rolling mills

**WELDMENTS** fabricated steel  
 plate, composite materials, or cast-weld  
 assemblies



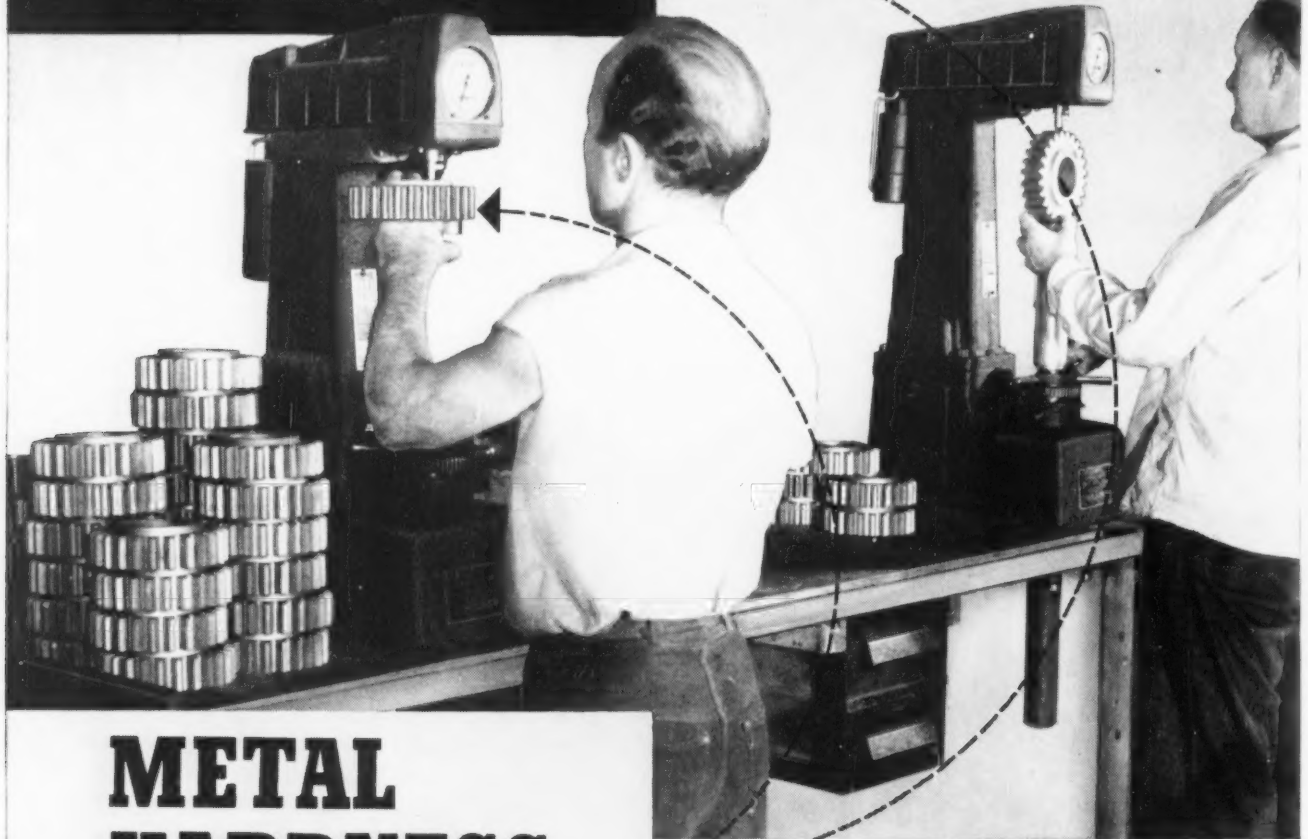
CHICAGO • PITTSBURGH

Plants at: East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.

**CONTINENTAL**  
 Foundry & Machine  
 Company



*Checking Rockwell hardness of  
both core and teeth on production run  
of Brad Foote gears . . .*



## METAL HARDNESS

- Upon the correct metal hardness rests the length of life you can expect from the gears you use. Good gear making consists of more than meets the eye. You can see a bad job of machining, but you can't see that the metal is too soft or too hard—until the gears give trouble.
- Here at BRAD FOOTE we make sure of metal hardness. We hold to extremely close tolerances checked carefully on the latest and best hardness-testing equipment. Nothing is left to chance, and no one shares our responsibility. So, when you buy BRAD FOOTE gears for your own use, or for use on equipment you make for others, you know that they will give long, satisfactory service.
- BRAD FOOTE makes every type of gear, out of any type of material. BRAD FOOTE makes speed reducers, gearmotors, transmissions, and intricate power units. We would like to discuss your requirements and make recommendations, or quote on your specifications. We'll give you prompt service.



## BRAD FOOTE GEAR WORKS, INC.

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Blshop 2-1070 • OLympic 2-7700

subsidiaries

AMERICAN GEAR & MFG. CO. • PITTSBURGH GEAR COMPANY  
Phone: Lemont 920  
Lemont, Illinois  
Phone: ATlantic 1-9950  
Pittsburgh 22, Pennsylvania

## Key to Steel Producers

With Principal Offices

- 41 Acme Steel Co., Chicago  
42 Alan Wood Steel Co., Conshohocken, Pa.  
43 Allegheny Ludlum Steel Corp., Pittsburgh  
44 American Clad Metals Co., Carnegie, Pa.  
45 American Steel & Wire Div., Cleveland  
46 Angell Nail & Chaplet Co., Cleveland  
47 Armco Steel Corp., Middletown, O.  
48 Atlantic Steel Co., Atlanta, Ga.  
  
B1 Babcock & Wilcox Tube Co., Beaver Falls, Pa.  
B2 Bethlehem Pacific Coast Steel Corp., San Francisco  
B3 Bethlehem Steel Co., Bethlehem, Pa.  
B4 Blair Strip Steel Co., New Castle, Pa.  
B5 Bliss & Laughlin Inc., Harvey, Ill.  
  
C1 Calatip Steel Corp., Los Angeles  
C2 Carpenter Steel Co., Reading, Pa.  
C3 Central Iron & Steel Co., Harrisburg, Pa.  
C4 Claymont Products Dept., Claymont, Del.  
C5 Cold Metal Products Co., Youngstown  
C6 Colorado Fuel & Iron Corp., Denver  
C7 Columbia-Geneva Steel Div., San Francisco  
C8 Columbia Steel & Shafting Co., Pittsburgh  
C9 Continental Steel Corp., Kokomo, Ind.  
C10 Copperweld Steel Co., Glassport, Pa.  
C11 Crucible Steel Co. of America, New York  
C12 Cumberland Steel Co., Cumberland, Md.  
C13 Cuyahoga Steel & Wire Co., Cleveland  
  
D1 Detroit Steel Corp., Detroit  
D2 Detroit Tube & Steel Div., Detroit  
D3 Driver Harris Co., Harrison, N. J.  
  
E1 Eastern Stainless Steel Corp., Baltimore  
E2 Empire Steel Co., Mansfield, O.  
  
F1 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.  
F2 Fitzsimmons Steel Corp., Youngstown  
F3 Follansbee Steel Corp., Follansbee, W. Va.  
  
G1 Globe Iron Co., Jackson, O.  
G2 Granite City Steel Co., Granite City, Ill.  
G3 Great Lakes Steel Corp., Detroit  
  
H1 Hanna Furnace Corp., Detroit  
  
I2 Ingersoll Steel Div., Chicago  
I3 Inland Steel Co., Chicago  
I4 Interlake Iron Corp., Cleveland  
  
J1 Jackson Iron & Steel Co., Jackson, O.  
J2 Jessop Steel Corp., Washington, Pa.  
J3 Jones & Laughlin Steel Corp., Pittsburgh  
J4 Joslyn Mfg. & Supply Co., Chicago  
  
K1 Kaiser Steel Corp., Fontana, Cal.  
K2 Keystone Steel & Wire Co., Peoria  
K3 Koppers Co., Granite City, Ill.  
  
L1 Laclede Steel Co., St. Louis  
L2 La Salle Steel Co., Chicago  
L3 Lone Star Steel Co., Dallas  
L4 Lukens Steel Co., Coatesville, Pa.  
  
M1 Mahoning Valley Steel Co., Niles, O.  
M2 McLouth Steel Corp., Detroit  
M3 Mercer Tube & Mfg. Co., Sharon, Pa.  
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.  
M5 Monarch Steel Co., Inc., Hammond, Ind.  
M6 Mystic Iron Works, Everett, Mass.  
  
N1 National Supply Co., Pittsburgh  
N2 National Tube Co., Pittsburgh  
N3 Niles Rolling Mills Co., Niles, O.  
N4 Northwestern Steel & Wire Co., Sterling, Ill.  
  
O1 Oliver Iron & Steel Co., Pittsburgh  
  
P1 Page Steel & Wire Div., Monessen, Pa.  
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.  
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.  
P4 Pittsburgh Coke & Chemical Co., Pittsburgh  
P5 Pittsburgh Screw & Bolt Co., Pittsburgh

- P6 Pittsburgh Steel Co., Pittsburgh  
P7 Portsmouth Div., Detroit Steel Corp., Detroit  
P8 Plymouth Steel Co., Detroit  
P9 Pacific States Steel Co., Niles, Cal.  
  
R1 Reeves Steel & Mfg. Co., Dover, O.  
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.  
R3 Republic Steel Corp., Cleveland  
R4 Roebling Sons Co. (John A.), Trenton, N. J.  
R5 Rotary Electric Steel Co., Detroit  
  
S1 Sharon Steel Corp., Sharon, Pa.  
S2 Sheffield Steel Corp., Kansas City  
S3 Shenango Furnace Co., Pittsburgh  
S4 Simonds Saw & Steel Co., Fitchburg, Mass.  
S5 Sloss Sheffield Steel & Iron Co., Birmingham  
S6 Standard Forging Corp., Chicago  
S7 Stanley Works, New Britain, Conn.  
S8 Superior Drawn Steel Co., Monaca, Pa.  
S9 Superior Steel Corp., Carnegie, Pa.  
S10 Sweet's Steel Co., Williamsport, Pa.  
S11 Seidelhuber Steel Rolling Mills, Seattle  
  
T1 Tonawanda Iron Div., N. Tonawanda, N. Y.  
T2 Tennessee Coal & Iron Div., Birmingham  
T3 Tennessee Products & Chem. Corp., Nashville  
T4 Thomas Steel Co., Warren, O.  
T5 Timken Steel & Tube Div., Canton, O.  
T6 Tremont Nail Co., Wareham, Mass.  
  
U1 United States Steel Co., Pittsburgh  
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.  
  
W1 Wallingford Steel Co., Wallingford, Conn.  
W2 Washington Steel Corp., Washington, Pa.  
W3 Weirton Steel Co., Weirton, W. Va.  
W4 Wheatland Tube Co., Wheatland, Pa.  
W5 Wheeling Steel Corp., Wheeling, W. Va.  
W6 Wickwire Spencer Steel Div., Buffalo  
W7 Wilson Steel & Wire Co., Chicago  
W8 Wisconsin Steel Co., S. Chicago, Ill.  
W9 Woodward Iron Co., Woodward, Ala.  
W10 Wyckoff Steel Co., Pittsburgh  
  
Y1 Youngstown Sheet & Tube Co., Youngstown

## MERCHANT WIRE PRODUCTS

	Standard & Coated Nails	Woven Wire Fence 9-15 1/2 ga.	Fence Posts	Single Loop Bale Ties	Twisted Barbed Wire	Gal. Barbed Wire	Merch. Wire Anvil	Merch. Wire Gal.
F o b Mill	Col	Col	Col	Col	Col	Col	Col	Col
Alabama City R3*	118	135	132	144	6.075	6.325		
Alquippa Pa J3	127	141		148	6.075	6.525		
Atlanta A5	130	140	135	149	6.325	6.675		
Baronville K2	127	139	140	148	6.075	6.50		
Buffalo W6								
Chicago N4	118	137	132	146	6.075	6.425		
Cleveland A6								
Cleveland A5					6.075	6.225		
Crawfordsville M4	130	140	134	149	6.175	6.55		
Donora Pa A5*	118	133	132	142	6.075	6.225		
Duluth A5*	118	133	132	142	6.075	6.225		
Fairfield Ala T2*	118	133	132	142	6.075	6.225		
Houston S2	135	147		156	6.475	6.925		
Johnston Pa B3	127	148	149			6.575		
Joliet Ill A5*	118	133	132	142	6.075	6.225		
Kokomo Ind C9			142		6.175	6.425		
Los Angeles B2					7.025			
Kansas City S2	139		144	160	6.675	7.125		
Minnequa C6*	123	146	138	153	6.325	6.70		
Monessen P6								
Moline Ill R3			136					
Pittsburg Cal C7*	137	156	156	162	7.025	7.125		
Pittsburgh P6	127	138		147	6.075	6.45		
Portsmouth P7		132			6.47			
Rankin Pa A5*	118	133		142	6.075	6.225		
So Chicago R3*	118	135	140	144	6.075	6.325		
S San Fran C6			156	167	7.025	7.40		
Sparrows Pt B3	129		134	151		6.675		
Struthers O Y1					6.075	6.475		
Terrance Cal C7*	138				7.025			
Worcester A5*	124				6.375	6.525		
Williamsport Pa S10								

Cut Nails carloads base \$7.80 per 100 lb. (less 20¢ to jobbers) at Conshohocken Pa. (A2) Wheeling W. Va. (W5) \$7.80.

\* Add 45¢ per 100 lb. on Std. & Coated Nails.

† Zinc extra if not included on Galv. Merch. Wire.

‡ Galv. Merch. Wire based on 15¢ Zinc.

## STAINLESS STEELS

Base price, cents per lb., f.o.b. mill. Ads 4.7 pct

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs, billets, rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars, wires, structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip, hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip, cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—Sheets, Midland, Pa., C11 Brackenridge, Pa., A3 Butler, Pa., A7 McKeesport, Pa., U1 Washington, Pa., W2 (type 316 add 4.5¢) J2 Baltimore, E1 Middletown, O., A7 Massillon, O., R3 Gary, U1 Bridgeville, Pa., U2 New Castle, Ind., I2 Ft. Wayne, J4 Lockport, N. Y., R4.

Strip, Midland, Pa., C11 Cleveland, A5 Carnegie, Pa., S9 McKeesport, Pa., F1 Reading, Pa., C2 Washington, Pa., W2 (type 316 add 4.5¢) W. Leechburg, Pa., A3 Bridgeville, Pa., U2 Detroit, M2 Canton-Massillon, O., R3 Middletown, O., A7 Harrison, N. J., D3 Youngstown, C5 Lockport, N. Y., S4 Sharon, Pa., S1 (type 301 add 1/4¢) Butler, Pa., A7 Wallingford, Conn., W1.

Bars, Baltimore, A7 Duquesne, Pa., U1 Marshall, Pa., U1 Reading, Pa., C2 Titusville, Pa., U2 Washington, Pa., J2 McKeesport, Pa., U1 Ft. Bridgeville, Pa., U2 Dunkirk, N. Y., A3 Massillon, O., R3 Chicago, U1 Syracuse, N. Y., C11 Watervliet, N. Y., A3 Waukegan, A5 Lockport, N. Y., S4 Canton, O., T5 Ft. Wayne, J4.

Wires, Waukegan, A5 Massillon, O., R3 McKeesport, Pa., F1 Ft. Wayne, J4 Harrison, N. J., D3 Baltimore, A7 Dunkirk, A3 Monessen, P1 Syracuse, C11 Bridgeville, U2.

Structurals, Baltimore, A7 Massillon, O., R3 Chicago, Ill., J4 Watervliet, N. Y., A3 Syracuse, C11.

Plates, Brackenridge, Pa., A3 (type 416 add 1/4¢) Butler, Pa., A7 Chicago, U1 Marshall, Pa., U1 Midland, Pa., C11 New Castle, Ind., I2 Lockport, N. Y., S4 Middletown, A7 Washington, Pa., J2 Cleveland, Massillon, R3.

Forged discs, die blocks, rings, Pittsburgh, C11 Syracuse, C11 Ferndale, Mich., A3 Washington, Pa., J2.

Forging billets, Midland, Pa., C11 Baltimore, A7 Washington, Pa., J2 McKeesport, F1 Massillon, Canton, O., R3 Watervliet, A3 Pittsburgh, Chicago, U1; Syracuse, C11.

ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

# Miscellaneous Prices

## PIPE AND TUBING

Base discounts f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS					
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2-3 In.		3 1/2-4 In.	
	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.	Blik.	Gal.
STANDARD T. & C.																				
Sparrows Pt. B3	30.5	8.25	33.5	12.25	35.5	15.75	36.5	16.25	37.0	17.25	37.5	17.75	38.0	18.25						
Youngstown R3	32.5	10.25	35.5	14.25	38.0	17.75	39.4	18.25	39.0	19.25	39.5	19.75	40.0	20.25						
Fontana K1	21.0	+1.25	24.0	2.75	26.5	6.25	27.0	6.75	27.5	7.75	28.0	8.25	28.5	8.75						
Pittsburgh J3	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	24.0	2.25	27.0	5.75	29.0	7.75
Alton Ill. L1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25						
Sharon M3	32.5	9.25	35.5	13.25	38.0	16.25	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.25						
Pittsburgh N1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0		27.0		29.0	
Wheeling W5	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25						
Wheatland W4	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75						
Youngstown Y1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
Indiana Harbor Y1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25						
Lorain N2	32.5	15.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
E&TRA STRONG																				
PLAIN ENDS																				
Sparrows Pt. B3	30.25	9.5	34.25	13.5	36.25	17.0	36.75	17.5	37.25	18.5	37.75	19.0	38.25	19.5						
Youngstown R3	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5						
Fontana K1	20.75		24.75		26.75		27.25		27.75		28.25		28.75							
Pittsburgh J3	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	23.75	2.0	27.75	6.5	31.25	10.0
Alton Ill. L1	29.25	8.5	33.25	12.5	35.25	16.0	35.75	16.5	36.25	17.5	36.75	18.0	37.25	18.5						
Sharon M3	32.25	10.5	36.25	14.5	38.25	17.5	38.75	18.0	39.25	18.5	39.75	19.0	40.25	19.5						
Pittsburgh N1	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75		27.75		31.25	
Wheeling W5	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5						
Wheatland W4	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0						
Youngstown Y1	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	22.5	23.75	4.5	27.75	8.5	31.25	12.0
Indiana Harbor Y1	31.25	10.5	35.25	14.5	37.25	17.5	37.75	18.5	38.25	19.5	38.75	20.0	39.25	20.5						
Lorain N2	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0

Galvanized discounts based on zinc, at 17¢ per lb. East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 1/2 pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.5¢ to 17.5¢ per lb., use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only butt-weld and seamless, 1 pt. higher discount. Plain ends, butt-weld and seamless, 3 in. and under 3 1/2 pts. higher discount. Butt-weld jobbers' discount, 5 pct. St. Louis zinc price net 13.5¢.

## COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa. ....	\$14.50 to \$15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa. ....	\$17.50 to \$18.00
Foundry, oven coke	
Buffalo, del'd	\$26.58
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Palmsville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.60
Cleveland, del'd	25.72
Cincinnati, del'd	26.00
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

## ELECTRICAL SHEETS

22 Ga. H-R cut length	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
F.o.b. Mill Cents Per Lb.							
Beech Bottom W3	7.85	9.10	9.90	10.45	11.00	11.70	
Brackenridge A3	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Granite City G2		8.55	9.00				
Ind. Harbor J3	7.35	7.85	9.10				
Mansfield E2	7.35	7.85	9.10	9.90			
Niles, O. N3	7.35	7.85					
Vandergrift U1	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Warren, O. R3	7.35	7.85	9.10				
Zanesville A7	7.35	7.85	9.10	9.90	10.45	11.00	11.70

## CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	\$105.30 to \$108.80
6 to 24-in., del'd N.Y.	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$123.00 to \$130.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	23.93	28.14	23.19	27.28
	2 1/2	12	32.17	37.83	31.19	36.67
	3	12	35.78	42.11	34.69	40.82
	3 1/2	11	44.72	52.65	43.36	51.05
	4	10	55.52	65.31	53.83	63.32
National Tube	2	13	22.81	27.94	22.23	
	2 1/2	12	31.28	38.31	30.51	
	3	12	35.87	43.93	34.98	
	3 1/2	11	42.56	52.12		
	4	10	54.02	64.16		
Pittsburgh Steel	2	13		28.58		
	2 1/2	12	32.16	39.19		
	3	12	36.87	44.93		
	3 1/2	11	43.76	53.32		
	4	10	55.54	67.68		

## C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. S7					
Carnegie, Pa. S9		7.65	8.25	10.20	12.50
Cleveland A5	5.10	7.30	8.25	10.20	12.50
Detroit D1	6.45	7.50	8.810		
New Castle, Pa. B4	5.80	7.65	8.25	10.20	
New Haven, Conn. D1	6.70	7.60	8.20		
Sharon, Pa. S7	5.80	7.65	8.25	10.20	12.50
Tranton N. J. R4		7.95	8.55	10.50	12.50
Wairton W. Va. W3	5.80	7.65	8.25	10.20	12.50
Worcester, Mass. A5	5.40	7.60	8.55	10.50	12.50
Youngstown C5		7.65	8.25	10.20	12.50

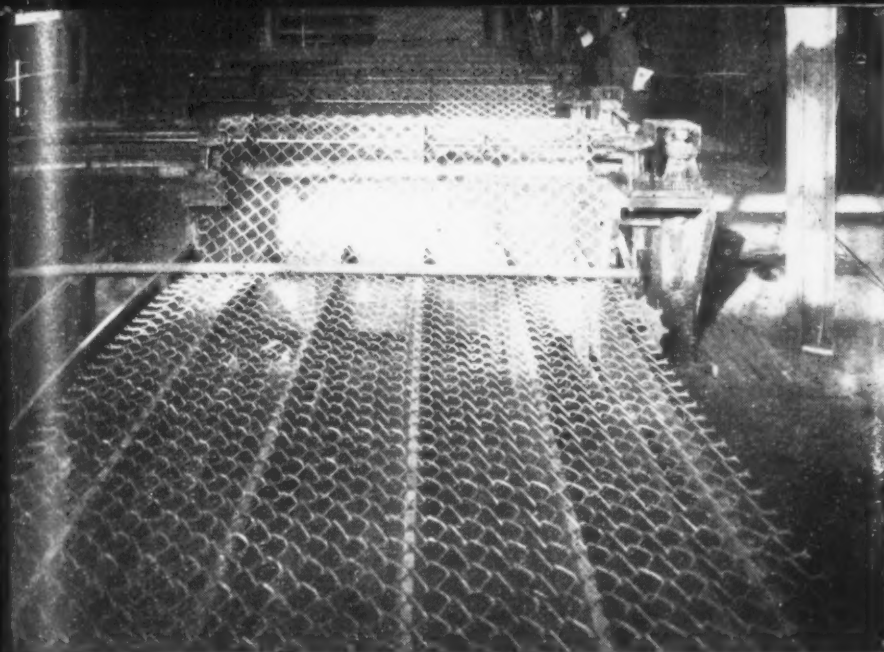
## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery	Low Phos. Charcoal
Bethlehem B3	56.50	57.00	57.50	58.00			
Birmingham R3	50.83	51.38					
Birmingham W9	50.83	51.38					
Birmingham S5	50.83	51.38					
Buffalo R3	54.50	55.00	55.50				
Buffalo H1	54.50	55.00	55.50			66.75	
Buffalo W6	54.50	55.00	55.50				
Chicago J4	54.50	55.00	55.50	55.50			
Cleveland A5	54.50	55.00	55.50	55.50	59.50		
Cleveland R3	54.50	55.00	55.50				
Dangerfield, Tex. L3	50.50	51.00	51.00				
Duluth J4	54.50	55.00	55.50	55.50			
Erie J4	54.50	55.00	55.50				
Everett, Mass. M6		59.25	59.75				
Fontana K1	60.50	61.00					
Geneva, Utah C7	54.50	55.00					
Granite City, Ill. K3	56.40	56.90	57.40				
Hubbard, Ohio Y1	54.50	55.00	55.50				
Ironton, Utah C7	54.50						
Jackson, Ohio J1 G1						65.50	
Lyle, Tenn. T3							68.50
Minnequa C6	58.50	57.50	57.50				
Monessen P6	58.50						
Neville Island P4	54.50	55.00	55.50	55.50			
Pittsburgh U1	54.50			55.50			
Sharpsville S3	54.50	55.00	55.50	55.50			
Steelton B3	56.50	57.00	57.50	58.00	62.50		
Swedeland A2	58.50	59.00	59.50	60.00			
Toledo J4	54.50	55.00	55.50	55.50			
Troy, N. Y. R1	56.50	57.00	57.50		62.50		
Youngstown Y1	54.50	55.00	55.50	55.50			
N. Tonawanda, N. Y. T1		55.00	55.50				

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery iron: Add \$1.50 per ton net for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferroalloy prices are \$1 over comparable silvery iron.





## \*CONTINENTAL Fence Features For Long-Lasting Property Protection

- Fence fabric is hot-dip galvanized—after weaving
- Heavy, modern post caps and barb-wire arms
- Snug-fitting inside-outside couplings
- Sturdy, closely spaced line posts in two styles
- Improved, pivot-type hinges—welded gates
- Extra ties hold fence fabric securely to posts and rails

You get more dollar value fence protection with Continental Chain Link fence. Rugged fabric is galvanized after weaving . . . heavier line posts and rails keep Continental fence in perfect alignment. Easier-operating gates swing on improved pivot hinges, and you get more ties to secure the fabric for longer fence life. Continental fence engineers plan and erect your fence for most effective, low-cost property protection. Write Continental at Kokomo, Ind., or contact nearest sales office.

### Planned and Erected to Fit Your Property

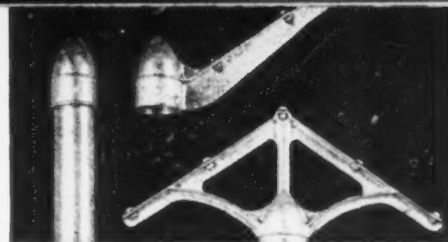


Continental's experienced fence engineers help you plan and lay out fence, tailored to fit your property.

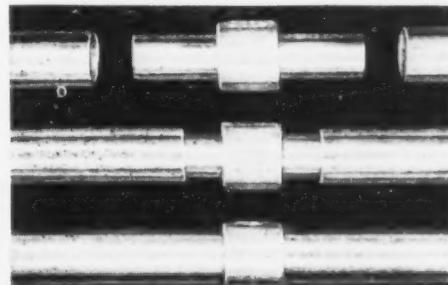


Line posts are solidly set in concrete—fabric carefully stretched and secured for permanence.

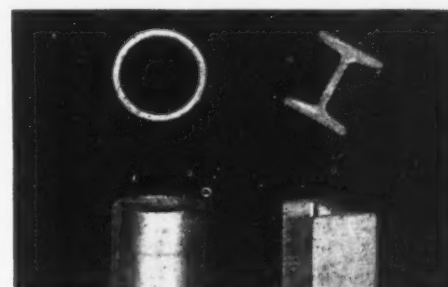
\* Trade Mark Reg. U. S. Pat. Off.



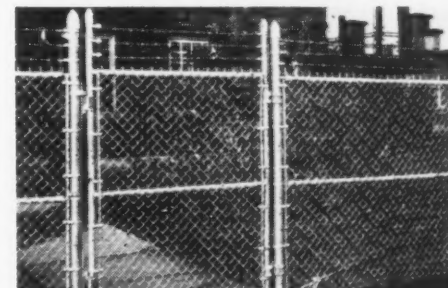
TERMINAL POSTS AND POST TOPS



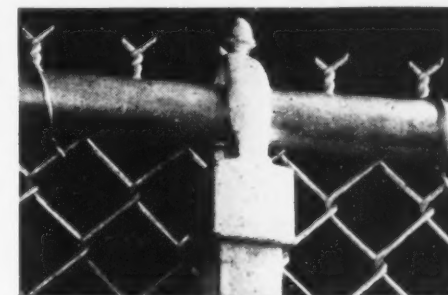
NEW TOP RAIL COUPLING



TUBULAR OR H-SECTION LINE POSTS



SMOOTH-OPERATING GATES



MORE POST AND TOP RAIL TIES



# CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, gauges, tempers and finishes, including Galvanized,

KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire.

ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

## Miscellaneous Prices

### RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1	3.775	4.25	4.925	6.65			
Chicago R3							
Cleveland R3							
Ensley T2	3.775	4.25					
Fairfield T2		4.25		6.65		4.775	
Gary U1	3.775	4.25				4.775	
Ind. Harbor I3	3.775		4.925	6.65		4.775	
Johnstown B3		4.25					
Joliet U1		4.25	4.925				
Kansas City S2							
Lackawanna B3	3.775	4.25	4.925			4.775	
Lebanon B3				6.65			
Minnequa C6	3.775	4.75	4.925	6.65		4.775	9.85
Pittsburgh R3							
Pittsburgh O1							
Pittsburgh P5							
Pittsburgh J3				6.65			
Pittg. Cal. C7						4.925	
Seattle B2				7.15		4.925	
Steelton B3	3.775		4.925			4.775	
Struthers Y1				6.65			
Terrance C7						4.925	
Youngstown R3				6.65			

### TOOL STEEL

F.o.b. mill  
Add 4.7 pct

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.505
18	4	1	—	5	\$2.13
18	4	2	—	—	\$1.65
1.5	4	1.5	8	—	\$1.00
6	4	2	6	—	\$6.50
High-carbon chromium					\$3.50
Oil hardened manganese					35¢
Special carbon					\$2.50
Extra carbon					27¢
Regular carbon					23¢
Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.					

### CLAD STEEL

Add 4.7 pct

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. L4	\$29.5	
Washington, Pa. J2	\$29.5	
Claymont, Del. C4	\$28.00	
Conshohocken, Pa. A2		\$27.50
New Castle, Ind. J2	\$29.77	\$26.24
Nickel-carbon		
10 pct Coatesville, Pa. L4	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. L4	40.5	
Monel-carbon		
10 pct Coatesville, Pa. L4	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. A4		77.00
Aluminized steel sheets, hot dip, Butler, Pa. A7		7.75

\* Includes annealing and pickling, or sandblasting.

### ELECTRODES

Cents per lb, f.o.b. plant threaded electrodes with nipples, unboxed

Dia n. in. in.	Length in. in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2 1/2	24, 30	23.15
2	24, 30	25.36
CARBON		
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.57
14	60, 72	8.84
10, 12	60	9.10
8	60	9.10

### FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill.  
Price, net ton; Effective CaF<sub>2</sub> content:  
70% or more ..... \$43.00  
60% or less ..... 40.00

### BOLTS, NUTS, RIVETS, SCREWS

#### Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

#### Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List		
	Less	Less	
	Keg.	Keg.	K.
	Reg.	Reg.	Hvy.
1/2 in. & smaller	15	28 1/2	15
9/16 in. & 5/8 in.	12	25	6 1/2
3/4 in. to 1 1/2 in.			21
Inclusive	9	23	1
1 1/2 in. & larger	7 1/2	22	1
			16 1/2
			16 1/2

#### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	31
3/4 in. to 1 1/2 in.				
Inclusive	12	25	2	17 1/2
1 1/2 in. & larger	8 1/2	23	2	17 1/2

#### Nuts, Cold Punched—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
Inclusive	19 1/2	31 1/2	12	25
1 1/2 in. & larger	8 1/2	23	2	17 1/2

#### Nuts, Semi-Finished—Hexagon

	Reg.	Hvy.
1/2 in. & smaller	35	45
9/16 in. & 5/8 in.	23	35
3/4 in. to 1 1/2 in.		
Inclusive	24	36
1 1/2 in. & larger	13	26
		8 1/2
		23
7/16 in. & smaller		
Light	35	45
1/2 in. thru 5/8 in.	28 1/2	39 1/2
3/4 in. to 1 1/2 in.		
Inclusive	26	37

#### Stove Bolts

Pct Off List

Packaged, steel, plain finished	48—10
Packaged, plain finish	31—10
Bulk, plain finish**	62*
*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.	
**Zinc, Parkertized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.	

#### Rivets

Base per 100 lb

1/2 in. & larger	\$7.85
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#### Cap and Set Screws

(In bulk)	Pct Off List
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in., SAE 1020, bright	54
1/4 in. thru 1 in. up to & including 6 in.	48
1/4 in. thru 5/8 in. x 6 in. & shorter	46
high C double heat treat	41
1/4 in. thru 1 in. up to & including 6 in.	35
Milled studs	16
Flat head cap screws, listed sizes	34
Fillister head cap, listed sizes	34
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

#### Machine and Carriage Bolts

	Pct Off List	
	Less	C.
	Case	
1/2 in. & smaller x 6 in. & shorter	15	28 1/2
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2
All diam. longer than 6 in.	14	27 1/2
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	

### REFRACTORIES

#### Fire Clay Brick

Carloads, per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5)	\$94.60
No. 1 Ohio	88.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	88.00
No. 2 Ohio	79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	13.75

#### Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$94.60
Childs, Pa.	99.00
Hays, Pa.	100.10
Chicago District	104.50
Western Utah and Calif.	111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago	111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	10.50
Silica cement, net ton, bulk, Hays, Pa.	18.70
Silica cement, net ton, bulk, Ensley, Ala.	17.60
Silica cement, net ton, bulk, Chicago District	17.60
Silica cement, net ton, bulk, Utah and Calif.	24.70

#### Chrome Brick

Per Net Ton

Standard chemically bonded Balt. Chester	\$82.00
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#### Magnesite Brick

Standard, Baltimore	\$104.00
Chemically bonded, Baltimore	93.00

#### Grain Magnesite St. %-in. grains

Domestic, f.o.b. Baltimore	
In bulk fines removed	\$62.70
Domestic, f.o.b. Chewahall, Wash., in bulk	36.30
In sacks	41.80

#### Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢...\$13.75

### LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 26, 1952

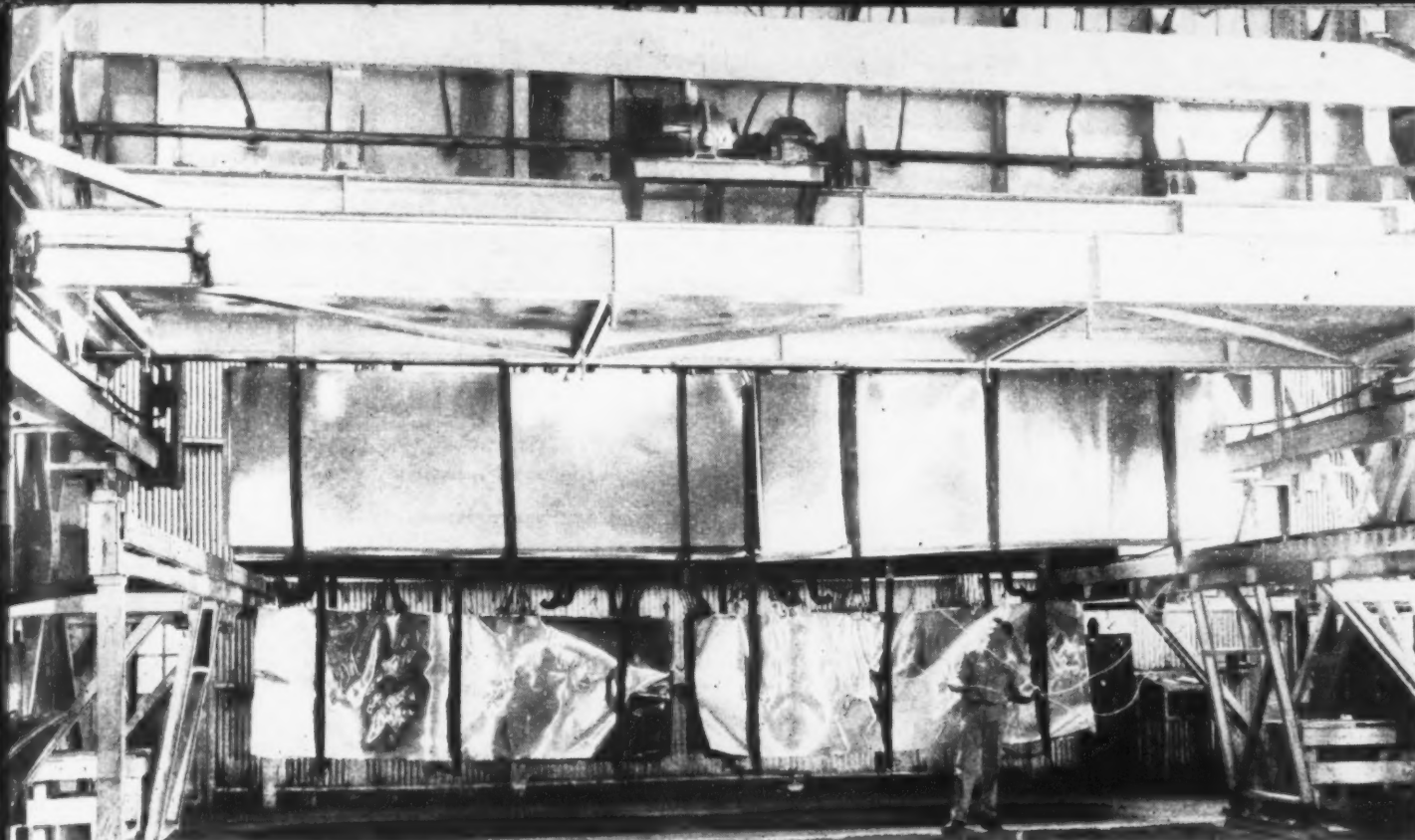
	Gross Ton
Old range, bessemer	\$9.45
Old range, nonbessemer	9.30
Mesabi, bessemer	9.30
Mesabi, nonbessemer	9.05
High phosphorus	9.05
After adjustments for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in Lake vessel rates, upper Lake rail freights, dock handling charges and taxes thereon.	

### METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f.	
New York, ocean bags	10.90
Canadian sponge iron, del'd. in East	12.00
Domestic sponge iron, 98+%	
Fe, carload lots	15.50 to 17.00
Electrolytic iron, annealed, 99.5+%	44.00
Electrolytic iron, unannealed, minus 325 mesh, 99+%	60.00
Hydrogen reduced iron, minus 300 mesh, 98+%	63.00 to 80.00
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+%	83.00 to \$1.48
Aluminum	31.50
Brass, 10 ton lots	30.00 to 33.25
Copper, electrolytic, 10.75¢ plus metal value	
Copper, reduced	10.00¢ plus metal value
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99%	
min., and quantity, del'd	\$3.50
Lead	7.50 to 12.00 plus metal value
Manganese	57.00
Molybdenum, 99%	27.75
Nickel, unannealed	88.00
Nickel, annealed	95.00
Nickel, spherical, unannealed	92.00
Silicon	38.50
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	83.00
Stainless steel, 316	\$1.10
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	\$6.00
Zinc, 10 ton lots	23.00 to 30.50





ELEVATOR FURNACE NEARS 10 YEARS SERVICE OF CONSISTENT, ACCURATE TREATMENT OF HIGH-QUALITY ALLOY SHEET.

## Reynolds Metals Co. Says "G-E Furnaces Meet Heavy Schedule, Need Few Repairs"

Their Listerhill, Alabama, plant is now operating at full capacity to meet the ever-increasing demand for aluminum. And to meet this high production schedule, Reynolds depends on many types of G-E electric furnaces for annealing, aging and solution heat-treating.

**MR. M. A. J. PHILLIPS**, Reynolds Vice-president, says, "We are very pleased with the dependable service our G-E furnaces give with little downtime." One of his engineers adds, "Uniform heat distribution is very important in aluminum heat-treating, and the consistent high-quality work our G-E furnaces turn out proves the importance of properly locating heating elements and

designing the circulation equipment to fit the loads."

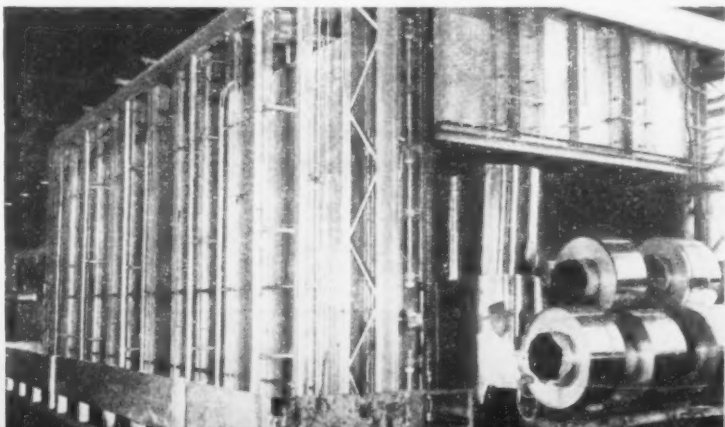
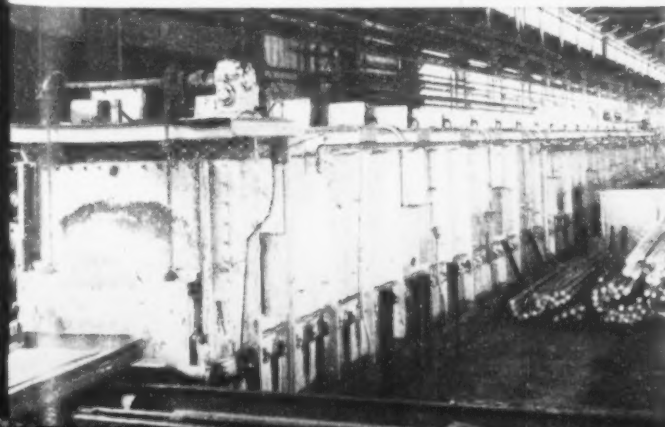
**ALUMINUM FABRICATORS**, as well as prime producers like Reynolds, can profit by using G-E furnaces for their heat-treating operations.

**TAKE ADVANTAGE** of G-E experience in heat-treating of aluminum. Call the nearest G-E sales office for the services and recommendations of their experienced Industrial Heating Specialist on your heat treating problem. *General Electric Company, Schenectady, N.Y.*

**GENERAL  ELECTRIC**

**SEVEN DAYS A WEEK** this roller-hearth furnace works around-the-clock to heat and spray-quench bars and rods at 950 F.

**100 TONS PER CHARGE** are annealed in this metal-lined truck furnace. Highest-quality stock results from uniform heating.





# What's New in New Jersey



**A**DDED TO THE WEALTH of research facilities which are concentrated in New Jersey is the newly dedicated James Forrestal Research Center at Princeton University.

Today, at this 800-acre center, more than \$1,500,000 worth of research tasks are being investigated. Subjects of current experimentation include fluid mechanics, combustion, chemical reactions, thermo-dynamics, applied mathematics, nuclear fission and aeronautical and jet propulsion engineering.

More than 10 per cent of the nation's research operates in New Jersey, the Crossroads of the East. More than 400 firms are active in the capitol of scientific endeavor, spending more than \$150,000,000 annually in laboratory and development work.

Industrialists appreciate the advantages which these research facilities give to manufacturers in New Jersey. We can provide you with more information about the Crossroads of the East.



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**PUBLIC SERVICE**  
... AT THE CROSSROADS OF THE EAST

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## Ferroalloy Prices

### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C ...	30.50	0.20% C ...	29.50
0.10% C ...	30.00	0.50% C ...	29.35
0.15% C ...	29.75	1.00% C ...	29.00
2.00% C ...			28.75
65-69% Cr, 4-9% C ...			22.00
62-66% Cr, 4-6% C, 6-9% Si ...			22.50

### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads ...	21.50
Ton lots ...	23.75
Less ton lots ...	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads ...	27.75
Ton lots ...	30.05
Less ton lots ...	31.85

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C ...	\$1.14
0.50% max. C ...	1.10
9 to 11% C ...	1.08

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed: lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, dumped, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe	
Carloads ...	19.00
Ton lots ...	22.10
Less ton lots ...	23.60

### Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si	
Carloads ...	20.00
Ton lots ...	22.30
Less ton lots ...	23.30

### CM52

Contract price, cents per lb of alloy delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C	
Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C	
Ton lots ...	20.75
Less ton lots ...	22.00

### SMZ

Contract price, cents per pound of alloy delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, 1/2 in. x 12 mesh.

Ton lots ...	17.50
Less ton lots ...	19.50

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots ...	18.50
Less ton lots ...	17.75

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed ...	18.00
Ton lots to carload packed ...	19.00
Less ton lots ...	20.50

### Ferromanganese

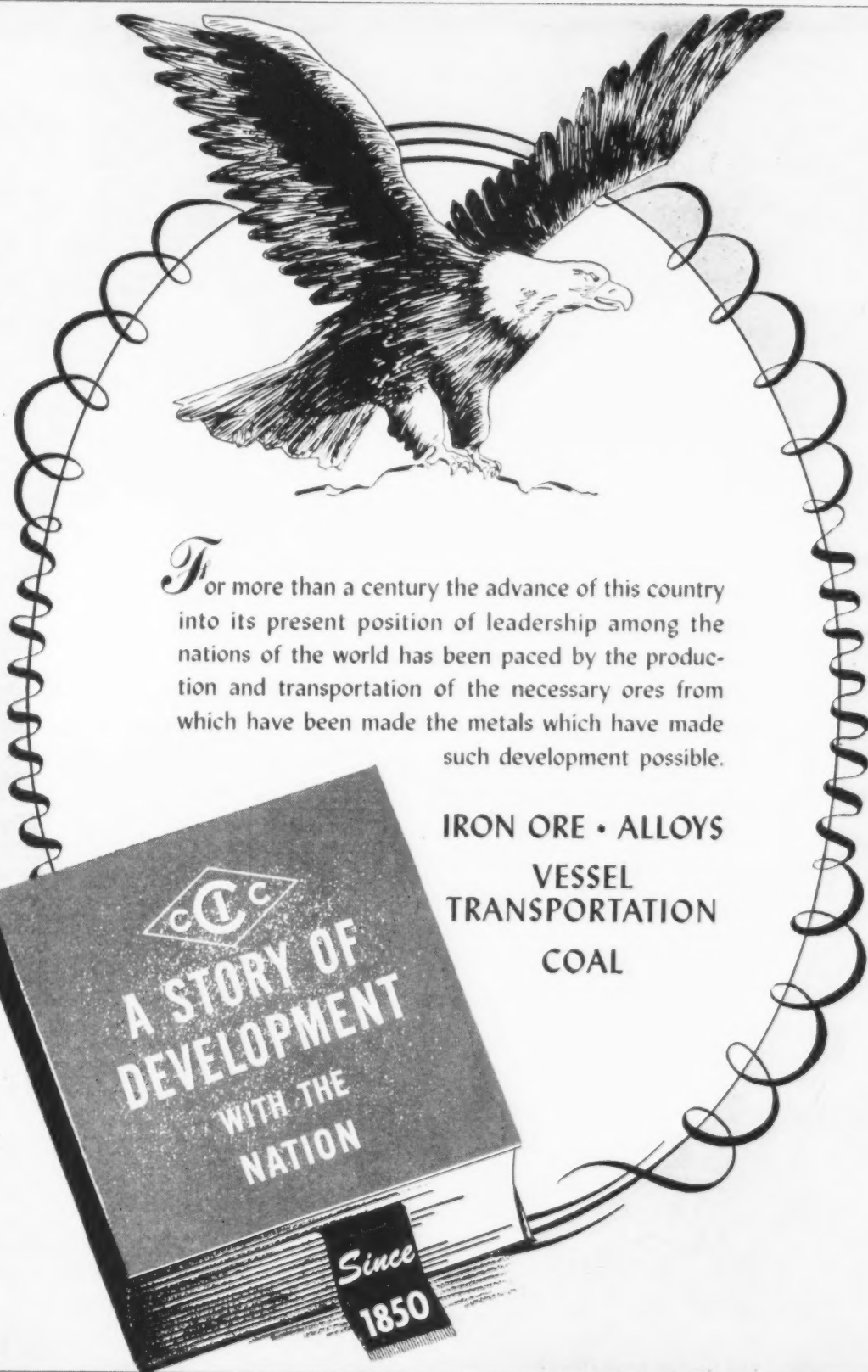
78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabua, O. ...	\$22.00
F.o.b. Johnstown, Pa. ...	\$22.00
F.o.b. Sheridan, Pa. ...	\$22.00
F.o.b. Etna, Clariton, Pa. ...	\$22.00

Add \$2.80 for each 1% above 82% Mn, subtract \$2.80 for each 1% below 78% Mn.

Briquets—Cents per pound of briquet delivered, 66% contained Mn.

Carload, bulk ...	12.40
Ton lots, packed ...	14.00



For more than a century the advance of this country into its present position of leadership among the nations of the world has been paced by the production and transportation of the necessary ores from which have been made the metals which have made such development possible.

IRON ORE • ALLOYS  
VESSEL  
TRANSPORTATION  
COAL

**THE Cleveland-Cliffs IRON COMPANY**  
UNION COMMERCE BUILDING • CLEVELAND 14, OHIO

## Ferroalloy Prices

### Spiegeleisen

Contract prices gross ton; lump, f.o.b.		
	16-19% Mn	19-21% Mn
Palmerton, Pa.	3% max. Si	3% max. Si
Pgh. or Chicago	\$84.00	\$85.00
	\$4.00	\$5.00

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.	
96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	36.95
Ton lots	38.45

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.	
Carloads	30.00
Ton lots	32.00
Less ton lots	34.00 to 37.00

### Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.	
	Carloads Ton Less
0.07% max. C, 0.06% P, 90% Mn	28.45 30.30 31.50
0.07% max. C	27.95 29.80 31.00
0.15% max. C	27.45 29.30 30.50
0.30% max. C	26.95 28.80 30.00
0.50% max. C	26.45 28.30 29.50
0.75% max. C, 80-85% Mn	25.45 26.30 26.50
5.0-7.0% Si	23.45 25.30 26.50

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn	
	21.35¢

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.	
Carload bulk	11.40
Ton lots	13.05

Briquet, contract basis carlots, bulk delivered, per lb of briquet	
Ton lots, packed	12.65
	14.25

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$95.00 gross ton, freight allowed to normal trade area.	
Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.00 for each 0.50% Mn over 1%.	

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.	
96% Si, 2% Fe	18.00
97% Si, 1% Fe	18.50

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.	
Carloads, bulk	6.95
Ton lots	8.55

### Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.	
25% Si	20.00
50% Si	12.40
75% Si	14.30
85% Si	15.55
90-95% Si	17.00

### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.	
	Cast Turnings Distilled
Ton lots	\$2.05 \$2.95 \$3.75
Less ton lots	3.40 3.20 4.55

### Ferrovanadium

25-55% contract basis, delivered, per pound, contained V.	
Openhearth	\$3.00-\$3.10
Crucible	3.10-3.20
High speed steel (Primus)	3.20-3.25

Alaifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carloads	9.90
Ton lots	11.10

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo	
	\$1.15

Ferrochromium, 50-60% 2 in. x D, contract basis, delivered per pound contained Cr.	
Ton lots	\$4.90
Less ton lots	4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cr, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cr plus Ta	
	\$3.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo	
	\$1.32

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	
	\$65.00
10 tons to less carload	\$75.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	
	\$1.35

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	
	\$1.50
Less ton lots	1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	
	\$177.00

Ferrotungsten, standard, lump or 1/4 x down, packed, per pound contained W5, ton lots, delivered	
	\$5.00

Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.	
	\$1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa.	\$1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢

Vanadium Pentoxide, 86-89% V <sub>2</sub> O <sub>5</sub> , contract basis, per pound contained V <sub>2</sub> O <sub>5</sub>	
	\$1.28

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	7.00¢

### Boron Agents

Borohal, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.	
	\$5.25

Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed	
Ton lots, per pound	10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots	
	\$1.20
F.o.b. Wash., Pa.; 100 lb up	
10 to 14% B	85
14 to 19% B	1.20
19% min. B	1.50

Gratnal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	\$1.00
No. 6	88¢
No. 79	80¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd	
Ton lots	\$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered	
Less ton lots	\$1.80

Silicax, contract basis, delivered.	
Ton lots	45.00¢



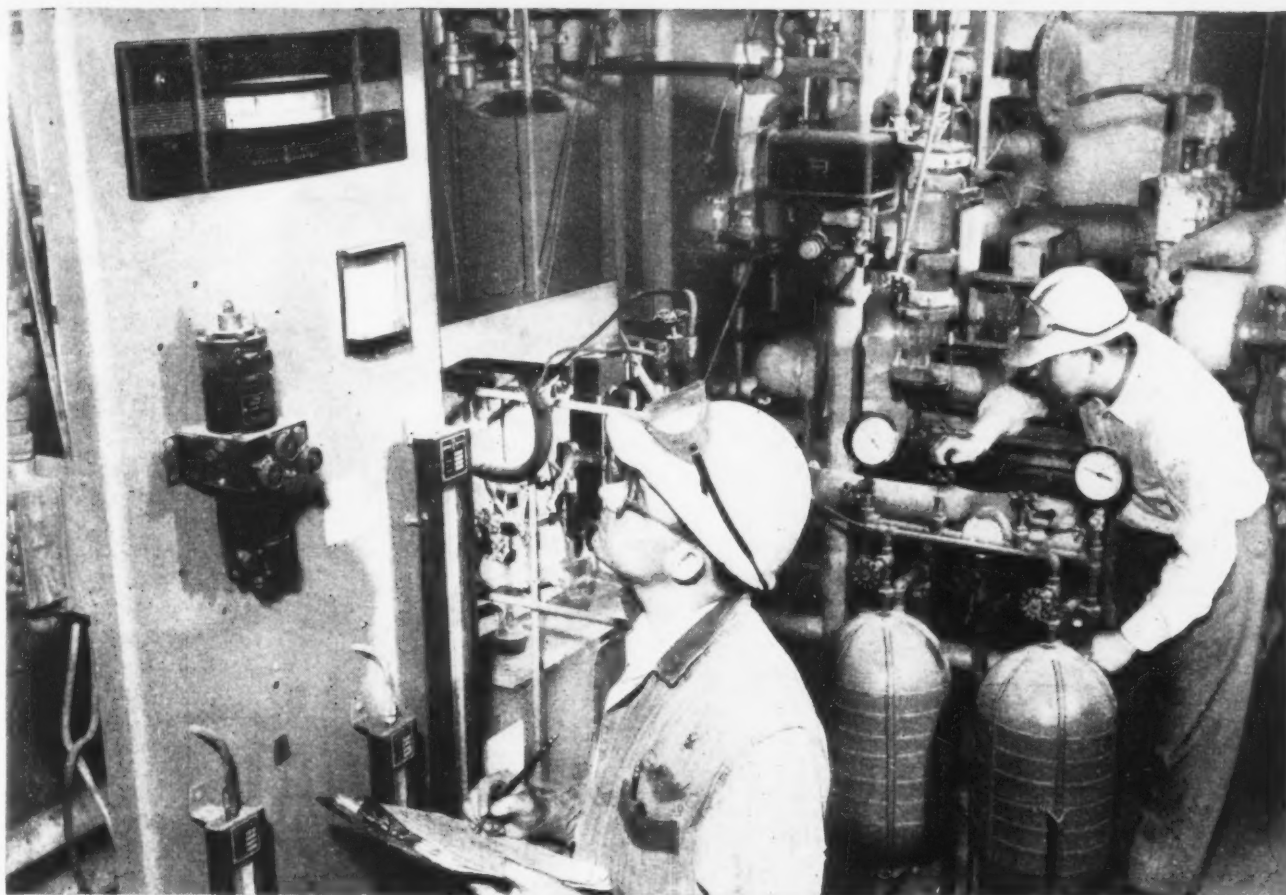
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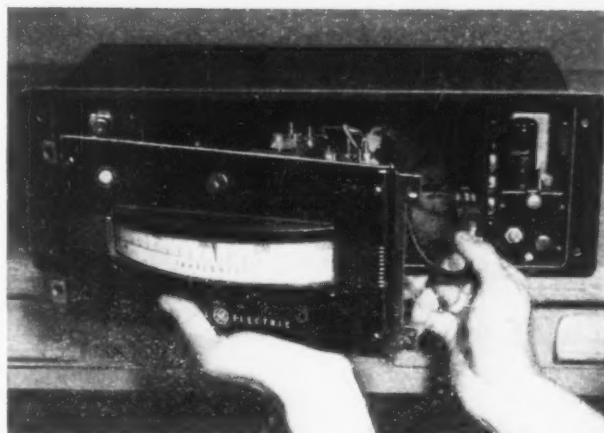
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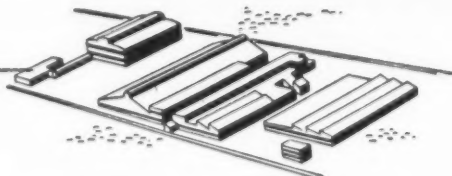
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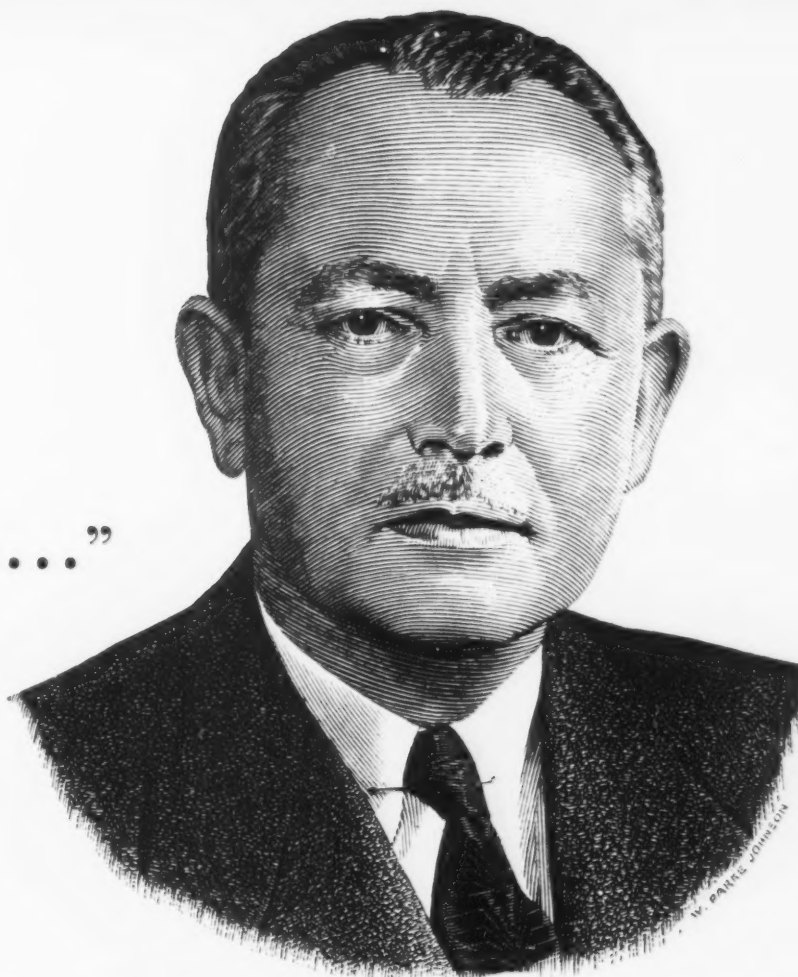
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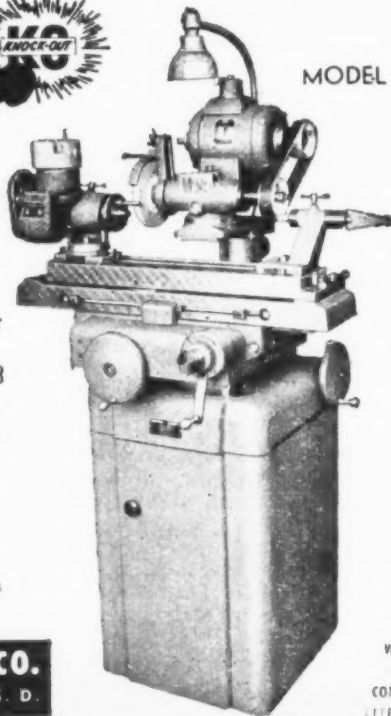
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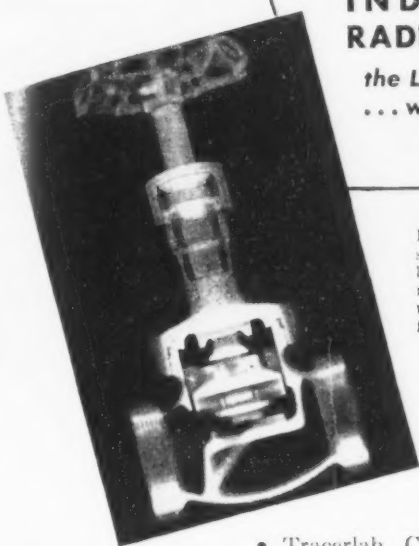
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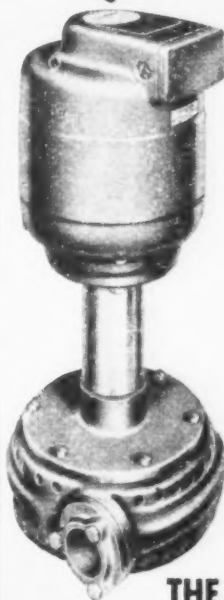
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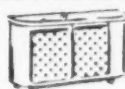
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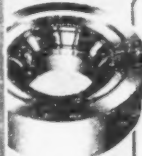
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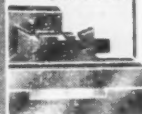
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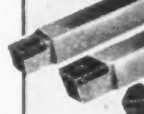


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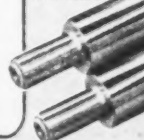
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## NEWS OF USED, REBUILT AND SURPLUS MACHINERY

**Tax Tape**—Like most businessmen, used machinery dealers find the complexities of tax laws becoming increasingly involved.

To assist members with their tax problems, Detroit Chapter of Machinery Dealers National Assn. called in a tax specialist to address its first fall meeting. Using the income tax law, regulations, and case decisions as the basis for his talk, William B. Isenberg, of the Detroit accounting firm of Isenberg, Newman & Co., explained the conditions under which capital gains can be claimed and deductions allowed in typical dealer transactions.

**Rentals**—Gains on machinery, which constitute the stock in trade of a dealer, are taxed as ordinary income, Mr. Isenberg stated. However, the gain on sales of machines originally purchased and held for rental purposes only is regarded as a capital gain under Sec. 115 (j) of the tax law.

Mr. Isenberg next discussed the case of machinery dealer who had a motor which he originally intended to sell but subsequently used himself. He later sold the machine at a profit. Under these conditions, the profit made on the sale was also regarded as a capital gain.

**Dual Operation**—In another instance, a dealer was engaged in both renting and selling machines. He maintained separate inventories and sales records for each department. Under this arrangement, when the dealer sold machinery which he had previously rented, he received the benefit of the capital gains rate.

When certain property such as business real estate, machinery and equipment is used in a dealer's business for more than 6 months and is then sold, exchanged, or lost by fire or condemnation, a separate section of the law, Sec. 117 (j) becomes effective. The gain on property which qualifies under this section receives the benefit of capital gains limitations and losses are fully deductible.

If transfers of such property are made between related persons or between stockholders and a controlled corporation, the benefits of capital gains and deductions are denied under Sec. 117 (o).

**Not Rent**—Mr. Isenberg also cited the case of a manufacturer who acquired some machinery under a lease agreement. He made fixed monthly payments which were designated "rental" for 5 years. After paying a small additional amount, he acquired title to the machines. This transaction was challenged by the Bureau of Internal Revenue, and the Tax Court ruled that payments were not deductible as rent but represented the purchase of capital assets.

Ruling in the case was that the payments were large enough to exceed depreciation. Since they gave the payer an equity in the property, the "rent" must be treated as payments on the purchase price.

**Longer Life?**—As a rule, it is a generally accepted fact that the life of used machinery will be shorter than that of new equipment. However, the Bureau of Internal Revenue has often disputed this, and in one case the Tax Court sustained the Bureau's findings. When the taxpayer took the case to the Circuit Court of Appeals, the Tax Court decision was reversed, Mr. Isenberg stated.

**MDNA Plans**—Among the programs which the Machinery Dealers National Assn. is pushing through its chapters are local lumber pools, group insurance for members and their employees and an industry advertising program.

Idea behind the lumber pool is to cut dealer crating expenditures by having one firm buy all the lumber for dealers in a certain area. This would permit purchases to be made by carload lots at a considerable saving.

MDNA Chicago Chapter has been the most active on this idea, though no details have as yet been worked out.



# THE CLEARING HOUSE

## CONSIDER GOOD USED EQUIPMENT FIRST

### AIR COMPRESSORS

14" x 12" Pennsylvania Air Compressor, 100# Pressure, Complete with 75 H.P. Syn. Motor  
18" x 11" x 14" Sullivan WJ-3 Air Compressor 855 CFM, Driven by 150 H.P. Westinghouse Syn. Motor 440/3/60

### BAR TURNING MACHINE

Medart HF-2 Bar Turning Machine, Capacity 1" to 3 1/2", Complete with Accessories

### BENDING ROLLS

8" x 1/2" Ryerson Pyramid Type Bending Roll  
20" x 1" Southwark Pyramid Type Bending Roll  
30" x 1" Southwark Pyramid Type, Motor Driven

### BRACKS—LEAF TYPE

8" x 1/2" Dreis & Krump Leaf Type Bending Brake Motor Driven with 5 H.P. A.C. Motor  
12" x 3/16" Chicago #226 Steel Apron Brake, M.D.  
18" x 1/2" Dreis & Krump Leaf Type Bending Brake, Motor Dr. with 40 H.P. A.C. Motor

### BUILDING

72'6" x 140' Steel Building—NEW—Designed for Corrugated Steel Siding—and to carry load of 30 ton Overhead Electric Traveling Crane

### BULLDOZER

29 Williams White Bulldozer, Motor Dr. with 50 H.P. Motor, 410 volt, 3 phase, 60 cycle, Face of Crosshead 20" x 80", Movement of Crosshead 24"

### CHARGING MACHINE

4000 lb. Hercules Floor Type Gasoline Driven Charging Machine, Equipped with Peel, Buda Gasoline Engine, Rubber Tires

### CRANES—GANTRY

5 ton Whiting Two Leg Gantry Crane 53' Span Cab Control, Motors 220 v. 3 ph. 60 cy.  
18 ton P&H Two Leg Gantry Crane 45' Span With 18' Overhang one end, 16' other end 5 ton Auxiliary, Two Trolleys and 5 Motors, 410 volt 3 phase 60 cycle

### CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton Robbins Meters 28'4" Span 220/3/60  
6 1/2 ton Shepard-Niles 80' Span 440/3/40 AC With 2 1/2 rd. Clamshell Bucket  
10 ton Shaw 67' Span 230 Volt D.C.  
10 ton P & H 40' Span 440/3/40 AC  
10 ton Erie 40' Span 440/3/40 AC  
15 ton Niles 60' Span 230 Volt D.C.  
15 ton Toledo 46' Span 220/3/60  
20 ton Bedford 50' Span 220/3/40 AC  
20 ton Morgan 68' Span 230 Volt DC With 5 ton Auxiliary

### DIEING MACHINES

75 ton Henry & Wright High Speed Dieing Machine Double Roll Feed, Seran Cutter, 3" Stroke  
100 ton Henry & Wright Dieing Machine, 4" Stroke, 15" Shut Height, Complete Elec. Equip.

### DIE CASTING MACHINES

Model RA-12 KUN Die Casting Machine, Air operated, Plunger Goggles Type for zinc, lead and tin. Die space between bars 1 1/2" x 1 1/2". Die Separates 8". NEW 1919, never used  
Pratt & Whitney Type H-1216 Single Spindle 3-Dimensional Keller Machine, with complete electrical equipment and accessories

### FLANGING MACHINES

1/2" McCabe Pneumatic Flanging Machine, Pneumatic Hold-downs, Circle Flanging Attachment

### FORGING MACHINES

4" National 1 1/2" x 3" x 4" x 5", Ajax  
1 1/2" x 3" x 5" x 8" Acoma  
5 Acoma Air Chisel

### FURNACES—HEATING

60 KW Leeds & Northrup Home Furnace #9475-UB-28, With controls, Work space 28" dia. x 28" deep

### FURNACES—MELTING

400 lb. Moore Type "UT" Melting Furnace, Top Charge, Complete with Transformer, New 1943—Little Used  
15 ton Herault Model V-12 Top Charge Hydraulically Operated, Complete with Transformer Equip.  
26 ton Moore Type "NY" Melting Furnace With 7500 KVA Transformer 13,400/3/60

### GEAR REDUCERS

500 H.P. United Combination Reduction Gear & Pinion Stand, Gear Ratio 8.581:1  
400 H.P. Parrel Birmingham, Size 18 Reduction Gear, Ratio 750 to 244 RPM  
700 H.P. Falk Single Reduction Gear, Ratio 875 to 200 RPM  
1800 H.P. Mesta Gear Reduction Unit, Ratio 19:1

### GRINDER

No. 4 Cincinnati Centerless Grinder, Motor Driven, Capacity standard work rest 3" to 6" dia., optional work rest 1/2" to 8", Special fixtures will allow work to be handled up to 9" dia.

### GRINDER—CYLINDRICAL

14 x 54" Norton Type C, Complete with Elec. Equip.

### HAMMERS—BOARD DROP

1200, 1400, 1600 lb. Model J2 Chambersburg

### HAMMERS—STEAM DROP

1500, 4000 lb. Erie

### HAMMERS—STEAM FORGING

1200 lb. Massillon Single Frame  
400, 1500, 2000 lb. N.H.P.  
600, 1100, 1500, 2000, 2500, 3500, 4000 Erie  
28,000 lb. Massey Steam Forging Hammer

### HAMMERS—MISCELLANEOUS

No. 6N Nazel Hammer, Geared Motor Drive  
200 lb. Bradley Compact Hammer, Arr. for Motor Drive with 10 H.P. A.C. Motor  
2000 lb. Chambersburg Pneumatic Hammer Complete with Elec. Equip. New 1951  
18"x12" Chambersburg Cocostamp Hammer, 18" stroke

WE OFFER A COMPLETE LIQUIDATION SERVICE ON ANY BASIS WHICH CIRCUMSTANCES INDICATE WOULD BE MOST BENEFICIAL, WHETHER BY AUCTION, PRIVATE LIQUIDATION OR OUTRIGHT SALE

CONSULTANTS IN MANUFACTURING PROBLEMS FOR OVER A QUARTER OF A CENTURY

THERE IS NO SUBSTITUTE FOR EXPERIENCE

CONTACT US IN CONFIDENCE WITHOUT COST OR OBLIGATION

### LATHE—TURRET

Model 2L, Glaholt Geared Head Turret Lathe, Spindle Bore 4-1/16", Elec. Equipment and numerous accessories incl. NEW 1951

### LEVELERS—ROLLER

26" McKay 17 Roll Leveler, 5 1/2" Dia. Rolls Belted Motor Drive  
60" Aetna Standard 17-Roll Leveler, 4 1/2" Dia. Rolls Arr. Motor Drive

### MOTORS

1250 H.P. Westinghouse Induction Motor 6600 volt 3 phase 60 cycle 502 H.P.M.  
2000 H.P. General Elec. Induction Motor 6600 volt 3 phase 60 cycle 400 H.P.M.  
2500 H.P. General Elec. Direct Current Motor 6600 volt 175/350 R.P.M.

### MOTOR GENERATOR SET

740 H.P. General Electric Syn. Motor 4400 volt A.C. with two generators 750 KVA 230 volt D.C., Complete with Panel Board, etc.

### NAIL MAKING MACHINES

No. 1 1/2 National—Sizes 10D, 12D, 16D, 20D, 30D  
No. 3 National—Size 6D  
No. 2 Glader—Sizes 6D, 7D, 8D, 9D  
Angell—Sizes 10D, 12D, 16D, roofing

### PLANER—PLATE EDGE

80" x 1 1/2" Southwark Plate Edge Planer, Motor Driven, Equipped with 16 Pneumatic Jacks

### PRESSES—HYDRAULIC

No. 200 Milwaukee Briquetting Press, Complete with Pumps, Platen Load 118 tons, Hydraulic Operating Pressure 2100 lbs. psi.  
75 ton Williams White Straightening Press, 27" Stroke, Bed 8' x 16", 8 1/2" Dia. Ram  
200 ton Bilas Hydrodynamic 48" Stroke Bed Area 24' x 24", 10" Pump, 10" Dia.  
500 ton Southwark Hydraulic 24" Stroke, 78" Daylight Platen 41" R to L x 32" F to B  
500 ton Southwark Open Throat Hydraulic Press 12" Stroke Platen 56" x 56"  
70 ton Elmes Forming Press, 27" Stroke, 30" Dia. Ram, Platen 40" x 88" with overhang 40" x 129", Complete with Pump and Motor

### PRESS—HYDRAULIC WHEEL

100 ton Elmes Inclined Hydr. Wheel Press 72" Between Parallel Bars, Complete with Pump & Motor

### PRESS—KNUCKLE JOINT

227 Bilas Knuckle Joint Embossing & Coining Press 1000 ton Capacity, 2 1/2" Stroke, 18" Shut Height

### PRESSES—STRAIGHT SIDE

No. 85A Bilas 250 Ton Capacity, Double Geared 32" Stroke, 30" x 33" Bed Area, Air Cushion  
No. 305 Bilas 9" Stroke 14" Shut Height Equipped with Marquette Air Cushion  
No. 59 Toledo Double Geared Tie Rod Press 255 ton Friction Clutch 18" Stroke 36 1/2" x 35" Bed Area  
No. 3 Ferracute Super Speed Punch Press 30 ton Capacity, NEW 1946—never used  
No. 675B Bilas Single Geared 1 1/2" Stroke, Double Roll Feed & Chopper, 10 H.P. A.C. Motor  
No. 620 Bilas High Production Press, 1 1/2" Stroke 81-40 Verson 200 ton Press, 30" Stroke Bed Area 40" x 41"  
No. 12 Zeh & Hahnemann Patent Percussion Press 150 ton 12" Stroke, 17" x 17" Bed Area  
No. 10-E Bilas 800 Ton, 10" Stroke Bed Area 60" x 126"  
No. 7 Bilas 400 Ton 8" Stroke Bed Area 48" x 108"  
No. 1037-5/8 Hamilton 300 Ton 16" Stroke Bed Area 48" x 104"  
No. 934C Toledo 175 Ton, 6" Stroke Bed Area 40" x 72"  
No. 606 1/2 Hamilton 185 Ton, 13" Stroke Bed Area 38" x 60"  
No. 934D Toledo 150 Ton, 8" Stroke Bed Area 34" x 54"

### PRESSES—TRIMMING

Bilas P.S. Trimming Press with Side Shear, 250 Ton Capacity, 8" Stroke 53" x 30" Bed Area  
No. 8 Erie Flywheel Drive Trimming Press, 3 1/2" Stroke 13" Between Guides  
No. 18 Erie Trimming Press, 100-150 Ton

### PUNCH—BEAM

Long & Allister Double End Beam Punch, Capacity Beam Punch End—Punch flanges and web 24" I-beam and smaller

### PUNCH & SHEAR COMBINATIONS

Ryerson Steel Frame Universal Ironworker, M.D. Capacity Punch 1/2" thru 1 1/2" Shear 1" Square, 1 1/2" Round, 1/2" x 4" Flats 1/2" x 4 1/2" Angles  
No. 28 U-30 Buffalo Armor Plate Universal Ironworker, Capacity Punch 1 1/2" thru 1 1/2", Shear 3" Round 3 1/2" Square, 5 x 1 1/2" Flat, 5 x 3 1/2" Angles  
Style EF Cleveland Single End Punch & Shear, M.D. Capacity Punch 1" thru 1 1/2"

### RIVETER

125 ton Hanna Bull Riveter, Air Driven, 24" Gap, 75" Reach, Capacity 1" rivets cold and 1 1/2" rivets hot

### ROLL—PLATE STRAIGHTENING

7 Roll Bertsch Plate Straightening Machine, Capacity 10" x 1/2", Complete Elec. Equip.

### ROLLING MILLS

7 1/2" Steckel Four High Rolling Mill, Max. Steel Width 6", Work Rolls 2 1/2" x 1 1/2", Complete with electrical equipment  
8"x10" Schmitz Single Stand Two High  
12"x18" Single Stand Two High, Comp. with Elec. Equip.  
12"x31" Waterbury Farrel Two High  
18"x24" Waterbury Farrel Two Stand Two High  
20"x36" Poole Two Stand Two High  
22"x40" Single Stand Two High  
27"x56" United Two High Skin-pass Mill  
28"x60" Single Stand Two High  
18"x60" Three High Roughing Mill, Complete with billet heating furnace and accessory equipment incl. elec. equip.

### ROLL—TAPER FORGING

No. 09 Williams White Taper Forging Roll, Rolls 34" Dia., Shaft 8" Dia.

### SAWS

No. 3 Ryerson Friction Saw, 51" Blade Hydraulic Feed, Complete with Elec. Equip.  
32" Ryerson Friction Saw, 45 H.P. Motor Capacity Approx. 8" Round, 20" I-beam, 12" H-beam

### SHEAR—ALLIGATOR

No. 7 Thomas Carlin Alligator Shear, 18" Blade, 20 H.P., D.C. Motor

### SHEARS—ANGLE

Hilles & Jones No. 2 Double Angle Shear, M.D. Capacity 6" x 6" x 1/2"  
Long & Allister Double Angle Shear, Model B, Capacity 6x6x 1/2", Complete with Elec. Equip.

### SHEAR—BAR

No. LH Lewis Open End Bar Shear, Motor Drive, Capacity 1 1/2" Round

### SHEAR—GATE

10"x1" Cincinnati Model 10010 Gate Shear, New 1946—Little Used

### SHEARS—ROTARY

No. 60 Quickwork Rotary Shear, 1/2" Capacity  
No. 100 Kling Rotary Shear, 1" Capacity  
No. 30 Quickwork Rotary Shear, 5/16" Capacity  
Quickwork Heavy Duty Circle Shear 1/2" Capacity  
Complete with Circle Cutting Attachment

### SHEARS—SQUARING

12"x3/16" Stanco Steel Squaring Shear, Motor Dr. 8" x 1/2" Drabert Model THZ 8-2500  
8" x 3/16" Cincinnati Series 1408, Motor Driven  
6" x 1/2" Long & Allister, Belted Motor Drive

### SLITTERS

81" Yoder Rheet Slitter No. 530, Capacity 3 cuts .104" to 8 Cuts .156", Motor Dr.  
72" Yoder Gang Slitter, Capacity 5 Cuts 20 Ga.

### STRAIGHTENERS

No. 3 Melart 3-Roll Straightening Machine Capacity 1" to 3 1/2" bars or 4 1/2" O.D. Pipe or Tubing, NEW 1950  
No. 4 Kane & Rosch 8-Roll Straightener Capacities 3" Rounds or Squares, 3x3 1/2" Angles 3 1/2" Channels, etc.  
No. 1 1/2B Sutton Round Straightener, Motor Dr. Capacity Tubing 5/16" to 2 1/2"—modified to handle up to 3 1/2" O.D. tubing  
No. 1B Sutton Round Straightener, Motor Drive Capacity 2/16" to 1/2" O.D. Friction Drive complete with 1/3 H.P. A.C. Motor  
Halden 8-Roll Strip Straightener, Flying Shear & Cutting Machine, Capacity 14" wide 11 Ga. Sheet Steel

### STRETCHER

McKay Hydraulic Bar Stretcher, Capacity up to 1 1/2" dia. in lengths 12" to 27"

### SWAGING MACHINES

No. E4 Lankeller, Capacity 1 1/2" Tubing  
No. 408 Etna Swager, Capacity 4" Tubing

### TESTING MACHINES

300,000# Southwark Emery Universal Hydraulics  
60,000 lb. Olsen 4 Screw Rotating Nut Type Universal  
20,000 lb. Southwark Emery Universal Hydraulics

### TRIMMING LINE

#1049 Torrington Trimming Line, With Feed Rolls and Scrap Cutter, Capacity for steel or aluminum alloys 1/2" max. Trimmed width 2 1/2" min. 60" max., Scrap Length 1/2" min., 3 1/2" max.

### TUBE MILL

Complete equipment for hot rolling seamless steel tubes ranging in sizes from 6 1/2" to 14 1/2"

### WELDERS

250 KVA Progressive Model A-6 Flash Welder 60 volt 60 cycle, Mechanical Contactor Hi-Pressure Clamp Assembly—NEW 1949  
McKay Tube or Pipe Welding Unit, Capacity 4 1/2" to 7 1/2" O.D. Complete with all accessory equipment and motors

### WIRE DRAWING MACHINE

No. 0 Waterbury Farrel 7-Die Wire Drawing Machine, Capacity 1/4" rod to #10 copper

• Manufacturing

**RITTERBUSH & COMPANY, INC.**

50 CHURCH ST., NEW YORK CITY 8

Telephone COrtlandt 7-2437

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Surplus Mfg. Equipment Inventories Purchased

October 16, 1952

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# THE CLEARING HOUSE

## MILES' QUALITY

AUTOMATICS, OOG Brown & Sharpe  
AUTOMATIC, 8" Bullard Multi-Au-Matic, 6-spindle  
AUTOMATIC, 6-spindle Baird chucker  
BORING MILL, 4" Detrick & Harvey, horizontal,  
floor type  
BORING MILL, 61" Bullard Maximill  
BORING MILLS, Two No. 50 Moline, 6-spindle  
cylinder boring  
BROACH, No. 1 Foote Burt duplex surface  
BROACH, 2-ton American horizontal hydraulic  
BROACH, V42 American hydraulic, 18 ton  
BROACH, 12-ton VU 12 LaPointe vertical hydraulic  
34" stroke, new 1948  
BULLDOZER, No. 22 Williams & White  
DRILL, No. 310 Baker, heavy duty  
DRILL, 24" Cincinnati, upright  
DRILL, 24" No. 25 Foote Burt  
DRILL, 12-spindle No. 12 Watco  
DRILL, 12 spindle No. 10 Dehance rail type  
DRILL, 36-spindle Bausch, adjustable spindle  
GEAR HOBBER, No. 12H G&E  
GEAR HOBBER, No. 130 Cleveland Rigidhobber  
GEAR HOBBER, No. 3 Adams Farwell  
GEAR HOBBER, Two No. 12 Barber-Colman  
GEAR HOBBER, Nos. 1 and 25 SA Lees Bradner  
HONE, Nos. 172 & 2610 Barnes hydraulic  
GEAR SHAVER 8"-12" Red Ring  
GRINDERS, CENTERLESS, Two No. 2 Cincinnati  
with pressure lubrication  
GRINDER, 6"x30" Cincinnati, type ER, in feed  
GRINDERS, CYLINDRICAL, 10x18 Norton with  
hydraulic quick infeed  
GRINDER, CYLINDRICAL, 12"x36" Bath universal  
GRINDERS, INTERNAL, Nos. 16-28 and 24-36  
Bryant  
GRINDERS, INTERNAL, Nos. 72A3 and 72A5  
Heald  
GRINDERS, SURFACE, 12" and 16" No. 22 Healds  
GRINDER, THREAD, late No. 33 Excellio, now ar-  
ranged for groove grinding  
HAMMER, Nos. 5N & 6B Hazel pneumatic  
HAMMER, 40 lb Bradley helve  
LATHE, TURRET, No. 5 Acme universal  
LATHE, TURRET, No. 6 W&S, G. H. motor-in-base  
MILLERS, Two No. 2 Cincinnati plain  
MILLERS, Nos. 1, 2 and 3 Kent Owens hand  
MILLER, 18" Cincinnati automatic  
MILLER, 24" Cincinnati automatic duplex  
MILLER, type 45 Product-O-Matic  
MILLER, 30 1/2" x 21" x 12" Ingersoll 4-spindle  
planer type  
MILLER, 48" x 20" x 20" Ingersoll planer type,  
3 vertical heads  
WILLER, 48" x 36" x 12" Ingersoll planer type,  
adj. rail  
MILLER, 84" Ingersoll 6-spindle rotary continuous  
MILLER, THREAD, Type C Hall planetary  
MILLER, THREAD, Nos. 4, 6 and CT 36 Lees  
Bradner  
PLANNER, 28"x28"x8" Gray Double housing one head  
PLANNER, 36"x36"x8" Cleveland upside  
PLANNER, 48"x48"x12" Gray  
PRESSES, Nos. P01, P1, P2, P3, PA4, p5 and  
CA4 Ferracule  
PRESS, 50 ton Warco OBI, 1947  
PRESS, No. 61 Cleveland OBI  
PRESSES, No. 56 1/2, 57 1/2 and 77 1/2 Bliss s.s.  
trimming  
PRESS, No. 245 1/2 Hamilton s.s. tiered frame  
PRESS, No. EG54 Ferracule knuckle joint  
PRESS, 800 ton No. 665 Toledo knuckle-joint coining  
PRESS, No. DAB411 Hamilton double action toggle  
draw  
PRESS, 100 ton HPM hydraulic  
RIVETERS, large variety  
SLOTTER, 16" Bement Miles crank  
SAWS, Three 816S Kalamazoo metal cutting band,  
new  
SAW, 7" No. 14 Higley cold-cutting  
SAWS, three L-W (Toledo) power hack, new  
SHAPER, 27" Morton draw cut  
SHEAR, 38" throat No. 17F New Duty  
STRAIGHTENER, No. 0 Sutton for bars  
TAPPER, 3 1/2" Bausch lead screw, radial  
TAPPERS, Two No. 71 Ettco  
TAPPER, 19" Hammond sensitive drilling & tapping  
TESTER, 230,000 inch-pound Tinius-Olsen No. 2  
torsion  
THREADERS, 2" Landis pipe threading and cutting  
THREADERS, Two 3/4" Landis, double spindle  
THREADERS, 2" Oster rotary head  
UPSETTER, 3" National air clutch  
UPSETTERS, Two 4" Ajax heavy duty, twin-gear  
WELDER, 200 KVA Federal flash butt  
WELDER, 100 KVA Thompson automatic spot  
WELDERS, 12" and 14", 12 KVA American Elec-  
tric Fusion Co. spot

WRITE FOR CATALOG NO. 193 FOR COMPLETE LISTING

## MILES MACHINERY CO.

2025 E. Genesee Ave.  
SAGINAW, MICHIGAN

## RENU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT

### D.C. MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCF	600	400/500
1	1750	Whao		600	550/700
1	1500	Whao		525	600
1	940	Whao	QM	250	140/170
1	600	Al. Ch.		250	400/800
1	500	Whao	CC-216	600	300/900
1	450	Whao		550	415
1	400	G.E.	MCF	550	300/1050
1	350	Cr. Wh.	CCM-151H	230	1100
1	335	Whao	SK-151B	250	300/900
100-300	300	G.E.	MFC	230	360/920
1	200	ReL	1970T	230	720
1	150	G.E.		600	250/750
1	150	Cr. Wh.	64H	230	1150
1	150	Cr. Wh.	83H-TEFC	230	960
1	150	Whao	SK-151B	230	800/1400
1	150	Whao	SK-201	230	360/950
50-120	120	G.E.	MFC	230	250/1000
1	100	Whao	SK-181	230	450/1000
1	100	G.E.	CD-175	230	385/730
1	100	G.E.	CDP-115	230	1750

### MILL & CRANE

1	50	G.E.	CO-1810	230	725
1	33	Whao	K-8	230	695
1	30	G.E.	MD-104 1/2 AA	550	700
1	20	Whao	K-5	230	975
1	18	Whao	K-5	230	630
1	10	C.W.	SCM-AH	230	1150
1	10	G.E.	MD-104	230	400/800
1	8.25	Whao	K-3	230	680
1	8	C.W.	SCM-FF	230	1750
1	3	Whao	HK-2	230	835
1	2 1/2	Whao	K-1	230	835

### A.C. MOTORS

#### 3 phase—60 cycle

Qu.	Hp.	Make	Type	Volts	Speed
1	1800	G.E.	MT-498	2300	360
1	1500	AIH		2300	720
1	1200	G.E.	MT	2300	375
1	500	Whao	CW	550	350
1	500	G.E.	IM	410	900
2	500	G.E.	M-574-Y	6000	900
1	500	G.E.	IP	550	500
1	400	Whao	CW	440	514
1	350	G.E.	MT-442Y	2200/4000	258
1	250	Al. Ch.		440	605
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-559A	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	20QB	440	505
1	200	G.E.	IM17	550	545
1	200	G.E.	IM-17	440	600
1	200	G.E.	IM	440	485
1	200	G.E.	MTP	440	1170
1	150 (unused)	Whao	CW	2300	485
1	125	Al. Ch.		440	730
1	125	G.E.	FT-559Y	440/2200	435
1	100	G.E.	IM	440	800
1	100	A.C.	ANY	440	695
1	100	G.E.	IM-16	2300	485
1	100	Whao	CW-688A	440	700

### SQUIRREL CAGE

2	850	G.E.	FT-559Y	440	8570
2	450	Whao	SK-1420	2800/4150	354
1	300	Al. Ch.		2200	385
1	300	G.E.	IK-17	440	880
1	200	G.E.	IK	440	985
1	200	G.E.	KT-557	440	1800
1	150	Whao	CS-856R	440	880
1	150	Whao	CS	440	580
1	150/75	G.E.	IK	440/900/450	
1	125	Al. Ch.	ADW	2200	1750
1	125	G.E.	KP-852R-Z	440/2200	8585
1	125	Whao	MS	440	485

### SYNCHRONOUS

2	8500	G.E.	TS	2300	257
2	2100	G.E.	ATI	2300	360
2	1750	G.E.	ATI	2300	360
2	2000	Whao		2300	130
1	785	G.E.	ATI	2200/12000	600
1	450	Whao		2200	450
1	350	G.E.	TS	2300	150

### M-G Sets — 3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000	G.E.	500	600	11000*
1	2000	G.E.	514	600	6000/13200
1	1500	G.E.	514	250	6000/13200
1	1500	G.E.	720	600	6000/13200
1	1500	G.E.	300	275	4400
1	1500	Whao	600	600	4100
1	1000	Whao	900	600	4100
1	1000	G.E.	900	380	6000
1	1000 (ST)	G.E.	900	350	2200
1	750	Whao	900	375	4100
1	500	G.E.	720	125	2300
1	500	Whao	900	125/250	440
1	500	Whao	900	250	6000/13200
1	400	Whao	1200	125/250	2300
1	400	Whao	1200	250	2300
1	400 (ST)	Cr. Wh.	1200	125/250	2300
1	350	G.E.	900	125	2300/4100
1	300	Al. Ch.	1200	125/250	9000
1	150	Whao	1200	275	300
1	140 (ST)	Cr. Wh.	600	125/250	440/2300
1	100	Delco	1200	170/310	2300
1	100	G.E.	1170	125	220/440

\* 25 Cycle

### FREQUENCY CHANGER SETS

Qu.	KW	Make	Freq.	Voltages
1	3000	G.E.	25/40	2300/2300/4000
1	2500	G.E.	25/42.5	2800/2300
1	1000	G.E.	25/58.3	4400/2300
1	500	Al. Ch.	25/60	11000/2300

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27"x12" MONARCH Geared Head Engine Lathe, taper attachment, AC-MD

24" x 72" centers BOYE & EMMES Heavy Duty Geared Head Engine Lathe, chuck, AC-MD.

No. 3L GISHOLT Universal Saddle Type Turret Lathe, bar feed, chucks, collets, tooling, hardened ways, rapid traverse, new 1943. Perfect Condition. Immediate Delivery.

No. 2B FOSTER Geared Head Turret Lathe, rapid traverse, AC motors

42" BULLARD New Era Type Vertical Turret Lathe, AC-MD

36" BULLARD Vertical Turret Lathe converted to Spiral Drive, AC-MD

1 1/2" LANDIS Double Head Bolt Threader, with leadscrews, MD

No. 1 DOUGLAS Plain Horizontal Mill, table 8"x32", power feeds, motor in base, No. 40 taper, new 1942.

No. 2 VAN NORMAN Plain Horizontal Mill, power rapid traverse, No. 50 taper, new 1942

No. 3-24 CINCINNATI Plain Hydromatic Mill

5-13" column CARLTON Radial Drill AC motor on arm, 15 to 1500 RPM

4' AMERICAN High Speed Sensitive Radial Drill 9" column, AC motor on arm

3 Spindle FOSDICK Drill Press, Individual AC motors for each spindle, 1942

No. 6 TOLEDO O.B.I. Press, 56 Tons

10"x24" NORTON Hydraulic Surface Grinder, 1942

25A HEALD Rotary Surface Grinder, 24" diameter, magnetic chuck

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75 Ton HENRY & WRIGHT Double Crank Dieing Machine, roll feed & Scrap cutter

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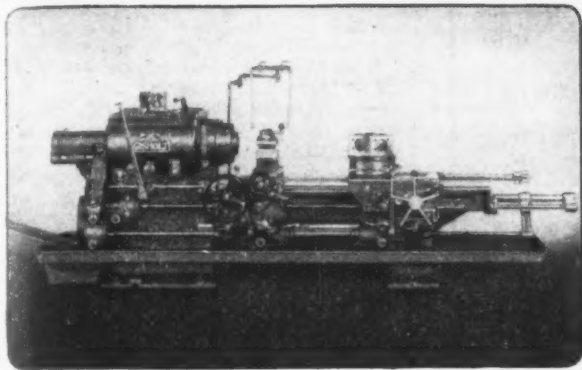
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6" American Radial Drill—Serial #55592  
#61A Fellows Gear Shaper—Serial #21252  
#3 Gisholt Turret Lathe—Serial #2807-1  
16" Gould & Eberhardt Shaper  
#72A Heald Sismatic Internal Grinder—Serial #24478  
60" Hanchett Face Grinder  
Lodge & Shipley Lathe—Serial #29051  
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6D Potter & Johnston Automatic Chucker—Serial #70393  
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42" Bullard New Era Vertical Lathe converted to spiral drive

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10" x 36" Landis Type C Plain Hydraulic—1941  
10" x 36" Cincinnati Model EA Plain Hydraulic—1939  
14" x 36" Norton Type C Plain Hydraulic—1943  
10" x 24" Landis Type C—1939  
12" x 36" Cincinnati—1940  
12" x 36" Norton Type L—1941

#### LATHES

13" x 18" Monarch Mona-Matic—1949  
14" x 30" Centers Reed Prentice—1939  
14" x 54" Lodge & Shipley High Speed—1941  
16" x 48" Bradford Quick Change—1940  
#1—16" x 15" Lodge & Shipley Duomatic—1938  
20" x 54" Centers Reed Prentice—1939

#### MILLERS

#000 Brown & Sharpe Plain—1942  
#4 Cincinnati Plain—1942  
#4K Kearney & Trecker Plain—1942  
#2H—24" Kearney & Trecker Knee Type—1940  
#1—18 Cincinnati Horizontal—1941  
#12—18 Milwaukee Simplex Horizontal—1940  
#18—54 Milwaukee Duplex Horizontal—1942

#2 Cincinnati Vertical—1942  
#4 Cincinnati Vertical—1942

#### TURRET LATHES

#3 Gisholt Ram Type—Bar Feed—1941  
#4 Gisholt Ram Type—1939  
#5 Gisholt Ram Type—Bar Feed—1942  
#1L Gisholt Saddle Type—1942  
#2L Gisholt Saddle Type—1941  
#2 Warner & Swasey All Gearing Head—1939  
#3 Warner & Swasey Universal—1938  
#4 Warner & Swasey Universal—1940  
#1A Warner & Swasey Saddle Type—Bar Feed—1939  
#1FU Fastermatic Universal Automatic—1943

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No. MM-1-6 U.S. Multi-Miller, m.d.  
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Model 1403 Milwaukee Simplex Production Milling Machine, m.d.  
3A Sundstrand Copy Rigidmill, m.d.  
Type P Ohio Mfg., m.d.  
4" Pratt & Whitney Spline, m.d.  
No. 33 Kemp Smith, s.p.d.  
18", 24" Cincinnati Plain Automatic, m.d.  
24" Cincinnati Duplex Automatic, m.d.  
No. 21 Brown & Sharpe Automatic, s.p.d.  
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Carter & Hakes, m.d.  
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54"x30"x17" Ingersoll Slab Miller, m.d.  
Taylor & Fenn 2 spindle Spline Miller, m.d.

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No. 1B Milwaukee, m.d.  
No. 1M Cincinnati, m.d.  
No. 1 Brown & Sharpe, cone, motorized  
No. 3 Van Norman Duplex, s.p.d.  
No. 3B Milwaukee, m.d.  
No. 2 Rockford, m.d.  
No. 2G LeBlond, belted m.d.  
No. 4 Ohio, cone

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No. 3 Kemp Smith, cone

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No. 3V Toledo, s.p.d.  
No. 6 Becker, cone  
Newton Vertical Miller, rotary table  
54" Ingersoll Single Spindle Adjustable Rotary Mill, m.d.

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1 1/2" Cincinnati Rack Mill, Attach. for No. 3 Dial Type Miller  
Vertical Attachment for Milwaukee Mfg. Type Miller  
Cincinnati Vertical Attach. for use on latest type  
No. 2L or 2MH rectangular overarm Millers  
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Rack Cutting Attachment for No. 4 Cincinnati High Power Miller, s.p.d.  
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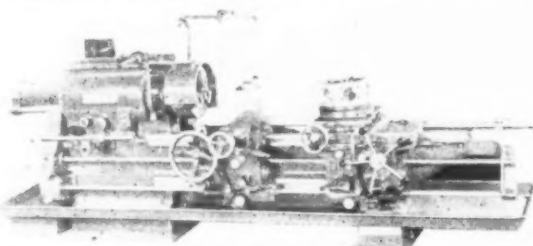
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With: anti-friction bearings, steel ways, cross sliding turret, power feed to carriage cross slide, compound rest with hand feed, taper attachment to front carriage, thread chasing attachment, with selective gear box, 9 leaders for thread chasing attachment, 5 short flange tool holders, 12" 3-jaw chuck, chuck guard and 7 1/2 H.P. 60 cycle 220-440 volt 1200 RPM Motor.

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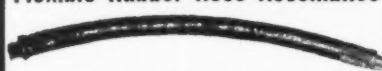
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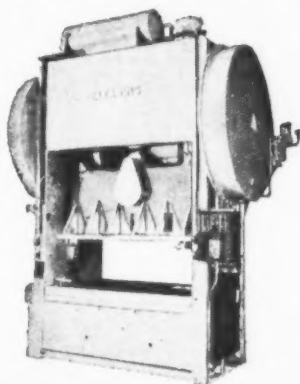
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Boring Mill, Bullard 24" Vertical Turret Lathe  
Boring Mill, Lucas Horizontal, 3" Bar, M.D.  
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2	9,981	35'0 1/2"	86 1/2"	7/16"	4—6x6x3/8"	1,180
2	9,315	34'6 3/4"	75 1/2"	3/8"	4—6x6x7/16"	1,050
2	9,240	34'11"	75 1/2"	3/8"	4—6x6x7/16"	1,050
6	9,205	34'11"	75 1/2"	3/8"	4—6x6x7/16"	1,050
4	9,206	34'11"	75 1/2"	3/8"	4—6x6x7/16"	1,050
2	9,243	34'11"	75 1/2"	3/8"	4—6x6x7/16"	1,050
2	9,957	34'7 1/2"	86 1/2"	7/16"	4—6x6x3/8"	1,180
20	9,946	34'7 1/2"	86 1/2"	7/16"	4—6x6x3/8"	1,180
2	10,288	35'11 3/4"	86 1/2"	7/16"	4—6x6x3/8"	1,180
1	6,443	Ap. 25'	41 1/2"	3/8"	4—6x6x1/2"	510
1	7,504	26'4 1/2"	75 1/2"	3/8"	4—6x6x7/16"	1,050
1	6,783	Ap. 25'	75 1/2"	3/8"	4—6x6x7/16"	1,050
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NIAGARA Double Cranks, 67C, 68C, 612C.  
BLISS No. 25K Knuckle Joint 600 Ton Capacity.

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Canal 6-2470

Grinder, Surface, 5x12x12" Taft Peirce, MD.  
Grinder, Thread, #33 Exello, MD. (1942)  
Hack Saw, 10x10" Rasmussen, MD. (1943)  
Lathe Converter, Versamill, 3/4 HP. 1.60/115 V. (new)

Lapping Machine, #7 Ultra, MD. (1943)  
Miller, Vertical, 08 Cin, MD. (1942)  
Nibbler, Gray, 36" tht., cap. 1", MD. (1948)  
Pipe and Nipple, 2" Landis D.H., MD. (1950)  
Press, Reducing, #156 Niagara B.G., MD., 56-Ton

Shear, 52"x12 ga. W. & M., MD. (1946)  
Thread Grinder, #33 Exello, MD. (1942)  
Thread Miller, 12x30" Morey-Shields, MD. (1942)  
Turret Lathe, #1 W. & S. 5/8", B.F., MD. (1941)

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1 Economy No. 112F Mechanical Briquetting Machine

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AUTOMATIC, 1 1/2"—4 Spin, Gridley Model G  
BOLT THREADER, 2" Landis, 2 hds., M.D. (2)  
BOLT THREADER, 1 1/2" Reliance Williams  
VERT. Attach. for Boring Mach. for 330T G. & L. Mill & Outer Support  
BORING MACH., 5" Bar, Betts Floor Type  
BORING MACHINE, 3" Bar Lucas, Table Type  
BORING MACH., 3" Bar, Lambert Table Type, M.D.  
BORING MILLS, 100" Cincinnati, Heavy, 2 Heads, M.D.  
BORING MILL, 72" King, 2 Hds., M.D.  
RADIAL DRILL, 4" 11" Col. Cincinnati, Bick., M.D.  
RADIAL DRILL TABLES, 36" x 20" x 20" (10)  
RADIAL DRILL, 6" 15" col. Amer., M-on-Arm  
RADIAL DRILL, 5" 15" col. Amer., M-on-Arm, Trl. Purp.  
RADIAL DRILL, 5" 14" Col. Amer., M.D.  
RADIAL DRILL, 5" Niles, No. 10, M-on-Arm, Late  
RADIAL DRILL, 4" Western, M.D. (2)  
RADIAL DRILL, 3 1/2" Morris, 9 1/2" col. Gear Box M.D.  
RADIAL DRILLS, 3" 8" & 2 1/2" (New)  
DRILL, 24" Cincinnati, Bick., Tapping  
DRILL, No. D8 Colburn 36", 5" capty.  
DRILL, No. 314 Baker, 24", 3" capty.  
GEAR CUTTER, No. 13, B. & S. Spur & Bevel  
GEAR PLANNER, 11" Reliance, Bovel, A.C., M.D.  
GEAR SHAPERS, Nos. 6 & 75 Fellows  
GEAR SHAPER, Nos. 61A, 64A & 64 Fellows, 1945  
GRINDERS, CYL., 16" x 48" Cincinnati, M.D.  
GRINDERS, FACE, 84" Builders, 32" wheel  
GRINDER, SURFACE, 14" P. & W. Vert. Spis, B.B.  
GRINDER, UNIV., 12" x 36" Thompson, M.D.  
GRINDER, Micro Int. M.D.  
GRINDER, No. 6-T Sellers Tool, '42  
KEYSEATER, No. 3 1/2 Baker, 26" x 4" capty.  
LATHE, 60" x 45" cen. Mackintosh-Hemphill, 1942  
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LATHE, 18" x 8" Bed, L. & S. Select Grd. Hd., M.D.  
LATHE, 14" x 30" Cen. Monarch, M.D.  
TURRET LATHE, 21" Acme Univ., Brass, Late  
TURRET LATHE, No. 18 Foster, Univ. 2" capty. (2)  
TURRET LATHE, No. 2B Foster, Univ. 3 1/2" capty.  
TURRET LATHE, No. 3 AL Gisholt, 6 1/4" H. S.  
TURRET LATHE, No. 3 Gisholt, Bar & Chuck  
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MILLER, No. 0 Sundstrand Rigidmill Hand  
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MILLER, UNIV., Nos. 3 & 2 Cincinnati  
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PLANNER, PLATE, 30" x 1" Cleveland, M.D.  
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PRESS, No. 731, Bliss S.S., 6" Stroke, 70 ton capty.  
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SHAPERS, 32" 20" x 16" Gould & Eberhardt  
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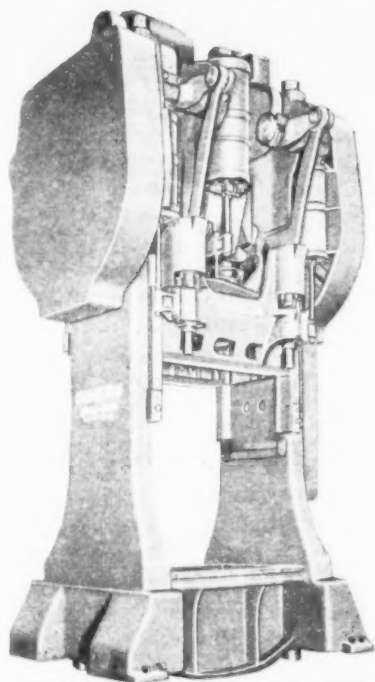
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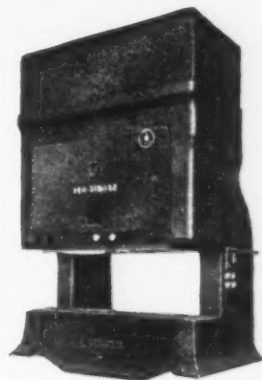


STRAIGHT SIDE, DOUBLE CRANK,  
DOUBLE ACTION

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Double Action, Toggle  
Drawing, 650-tons capacity  
Area of bed 62" FB x 74" RL  
Stroke of plunger slide 39"  
Stroke of blankholder slide 28"  
Shut height, 75"  
60 HP Driving motors,  
Complete with all electrical equipment  
Weight approx.: 188,000 lbs.



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2 1/2" squares or 1" x 8" slabs. No motor.

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90" lg., stroke 30"—die space 43"—61"  
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Model RA-4 1 1/2" Acme Gridley Auto-  
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HP-100 La Pointe Horizontal Hydraul-  
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3'11" Archdale Radial Drill, 1947.  
No. 7 Gleason "Revex" Gear Rougher,  
1943.  
14" x 168" Norton Plain Type C  
Grinder, 1942.  
24-36 Bryant Hydraulic Internal  
Grinder.  
No. 72A3 Heald Plain Hydraulic In-  
ternal Grinder, 1941.  
27" x 192" Niles "Timesaver" Engine  
Lathe, 1941.  
27" x 120" Lodge & Shipley Engine  
Lathe, 1940.  
No. 3FU Foster "Fastermatic" Platen  
Type Lathe, 1942.  
No. H5 Libby Universal Saddle Type  
Turret Lathe, 1939.  
No. 3R Gisholt Universal Saddle Type  
Turret Lathe, 1942.  
No. 4R Gisholt Universal Saddle Type  
Turret Lathe, 1943.  
8" x 84" Lo-Swing Semi-Automatic,  
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650 Ton Verson Double Action Ec-  
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5/8"	Diameter	Weight	228 lbs.
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11/16"	Diameter	Weight	231 lbs.
3/4"	Diameter	Weight	1,000 lbs.
13/16"	Diameter	Weight	978 lbs.
15/16"	Diameter	Weight	23 lbs.
7/8"	Diameter	Weight	25 lbs.
1"	Diameter	Weight	12,000 lbs.
1 1/8"	Diameter	Weight	944 lbs.
1 3/16"	Diameter	Weight	210 lbs.
1 5/16"	Diameter	Weight	4,403 lbs.
1 3/8"	Diameter	Weight	2,984 lbs.
1 3/4"	Diameter	Weight	2,157 lbs.
1 15/16"	Diameter	Weight	2,400 lbs.
3"	Diameter	Weight	219 lbs.
TYPE 304			
1 1/2"	Diameter	Weight	500 lbs.
1 5/16"	Diameter	Weight	1,000 lbs.
3"	Diameter	Weight	200 lbs.
1 1/4"	Diameter	Weight	620 lbs.
TYPE 309			
5/16"	Diameter	Weight	800 lbs.
TYPE 321			
1"	Diameter	Weight	10,000 lbs.
TYPE 347			
3/4"	Diameter	Weight	1,002 lbs.
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3000 KVA—Westinghouse, H.T. 26400/13200V,  
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345 KVA H.T. Reactor; Motor operated H.T.—  
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### 800 H.P. MILL MOTOR

800 HP, 870 RPM Westinghouse Slip Ring.  
Type CW, 2200/3/60.  
Complete with semi-automatic control  
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Complete with 5000 KVA  
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CRANE AND MILL MOTORS—230-VDC				
Qu	HP	Make	Type	RPM
1	265/300	G. E.	MDP-320	350/410
(Spare armature & anti-friction bearings for above motor)				
1	150/200	Whale	MCB-100	370/300
1	150	Whale	MT-5	350
1	100/140	Whale	MCB-90	500/415
4*	100/140	G. E.	MDA-100	430/500
3	100/130	G. E.	CO-1831	475/600
2	85/65	Whale	K-10	825/700
1	75/60	Whale	K-10	425/470
1*	75/100	Whale	CK-10	500/675
5	70/80	Whale	MCA-70	410/490
2	70/80	Whale	MCB-70	410/490
1	50/80	G. W.	FW	575/430
1	50	G. E.	CO-1820	750
1	50/65	Whale	MCLA-121	500/450
2	50/65	Whale	MCA-60	475/425
1	50	G. E.	CO-1810	725
1	65/85	G. E.	CO-1830	700/650
1	65/85	G. E.	CO-1811	600/500
4	45/57	Whale	K-9	515/470
1	45/57	Whale	KG-9	515/470
1	35/45	G. E.	CO-1810	500/450
1*	35	G. E.	MDA-194½	670
1	30	C. W.	FIL	750
1	25/35	G. E.	CO-1820	750/550
1	27½	Whale	K-6	1050
2	25/30	G. E.	MDN-400	575/500
2	23/30	G. E.	MDP-108	600/415
2*	20/25	Whale	MCA-40	600/470
6	18/15	Whale	K-5	830/760

Qu	HP	Make	Type	RPM
3	16/19	C. W.	BW	620/560
1	16/13	G. E.	MDN-400	615/700
1	15	G. E.	CO-2505	700
1	15/19	G. E.	CO-1807	600/525
1*	13/17	G. E.	MDA-103	615/725
1*	13/17	G. E.	MDP-103	645/725

All motors series wound except those marked (\*), which are compound; can furnish these for series operation.

### SYNCHRONOUS MOTORS

3-Phase—60-Cycle				
Qu	HP	Make	P.F.	Volts
1	6000	G. E.	100	3300
1	4350	C. W.	100	13,200/6000
1	3000	Whale	80	4800/2400
2	2100	G. E.	100	2300
2	1750	G. E.	100	2300
1	1000	El. Michy.	100	440
1	750	G. E.	80	2300
1	700	G. E.	80	2300
1	250	G. E.	100	2300

With these we can supply—manual, semi or full magnetic, full or reduced voltage control.

Motor Generators of modern design, complete with control—still on their original foundations—available for immediate shipment.  
(3)—G. E. 1500-KW. 250-VDC, 514 R.P.M., spd., interpole, pole face windings, 2100-HP syn. motors, 8-P.F., 13,200-V, 3-φ, 60-cy. will re-connect to 6600 V. or 4100-V.

SLIP RING MOTORS—CONSTANT DUTY				
3-Phase—60-Cycle				
Qu	HP	Make	Type	RPM
1**	1800	G. E.	MT-498	3300
1**	1200	G. E.	M-26	2200
1**	1000	Al. Ch.	ANY	2200
1	800	G. E.	MT	2200
1**	600	G. E.	MT-20	2200
2	500	G. E.	1-16-M	2300
1**	400	Al. Ch.	ANY	2200
2	400	G. E.	MT-413	2300
1	250	Whale	CW-937	440

From our stock we can furnish manual and magnetic primary and secondary controls up to 2500-HP.

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Qu	KW	Make	RPM	Volts DC	Volts AC
1 (S-U)	2400	Whale	720	600	2400/4800
3	1000	Whale	514	600	11000/6600
4	1000	G. E.	514	600	11000/6600
1	1000	G. E.	514	600	2300
1	500	C. W.	720	275	2200/440
1 (3-U)	500	Whale	1200	250	440
2	500	C. W.	720	575	3300/440
2	250	Whale	1200	125/250	2300
1	200	Ridgway	900	375	2300
1	150	G. E.	750	250	2700/440
2	150	Whale	1200	250	2300

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10-ton Champion 100' span between ground rails, 31' overhang one end, 23'9" other end, 45' lift, with 1200' of 100# rail. Now 550-VAC, will arrange for 220/440-VAC or 230-V.D.C. AVAILABLE FOR IMMEDIATE INSPECTION AND SHIPMENT. In excellent condition. The kind of crane that is seldom on the market.

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Traveling Cranes

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720' Crane runway 36"  
Beams and 75 lb. Rails

1—10 ton Whiting 40' A.C.  
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1—Twin rolling mill 20 x 30", two high, Ryertex brgs. center drive control panel and motor 500 H. P., 514 RPM, 2300 volts, 3-phase, 60 cycle. Miscellaneous rolls for both above mills.

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350—230v. D.C. Motors

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Speeds 500 to 1750 RPM

2—150 HP    6—40 HP    75—10 HP  
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#1 High Speed Hamilton Gear Hobber  
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LINCOLN TUNNEL  
THIRD TUBE  
MANUFACTURE, STORAGE AND DELIVERY  
OF  
BOLTS, NUTS AND WASHERS  
CONTRACT LT-160.002

Sealed proposals for the manufacture, storage and delivery of bolts, nuts and washers for the lining of the Third Tube of the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:30 P.M. Friday, November 7, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of \$25 per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY  
Howard S. Cullman, Chairman

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1st & 3rd ISSUES of the MONTH ONLY

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CONTRACT 413

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, October 28, 1952, for Contract 413, for furnishing, testing and delivering deep well turbine pumps and deep well plunger pumps, electric motors and appurtenances for the Neversink intake chamber, the Downsview release water chamber and the intake and outlet chambers of the East Delaware tunnel, of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of four thousand dollars (\$4,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawing, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars (\$5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars (\$4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President,  
RUFUS E. MCGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

# CONTRACT MANUFACTURING DIRECTORY

The directory of production services. (This section appears in the first and third issues of each month.)



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## CONTRACT MANUFACTURING

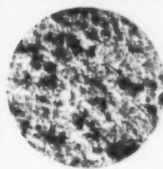
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## WANTED

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Fully experienced on shop and yard assembly of structural steel fabrication for all types of bridges.

Excellent opportunity for man of experience — attractive salary and bonus.

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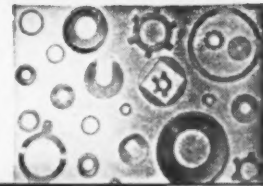
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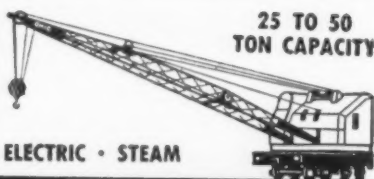
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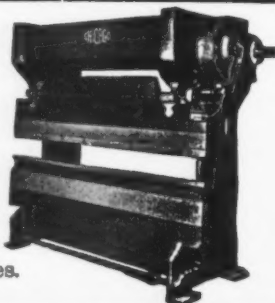
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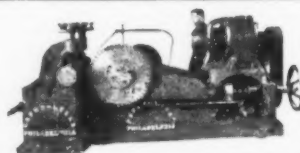
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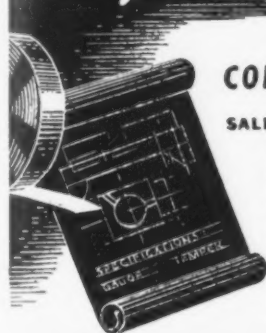
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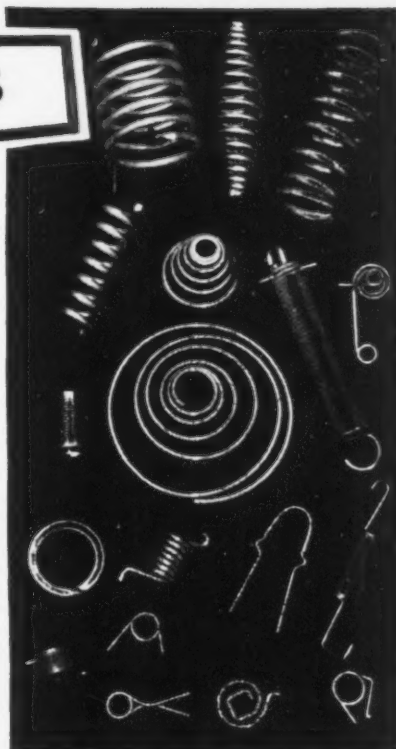
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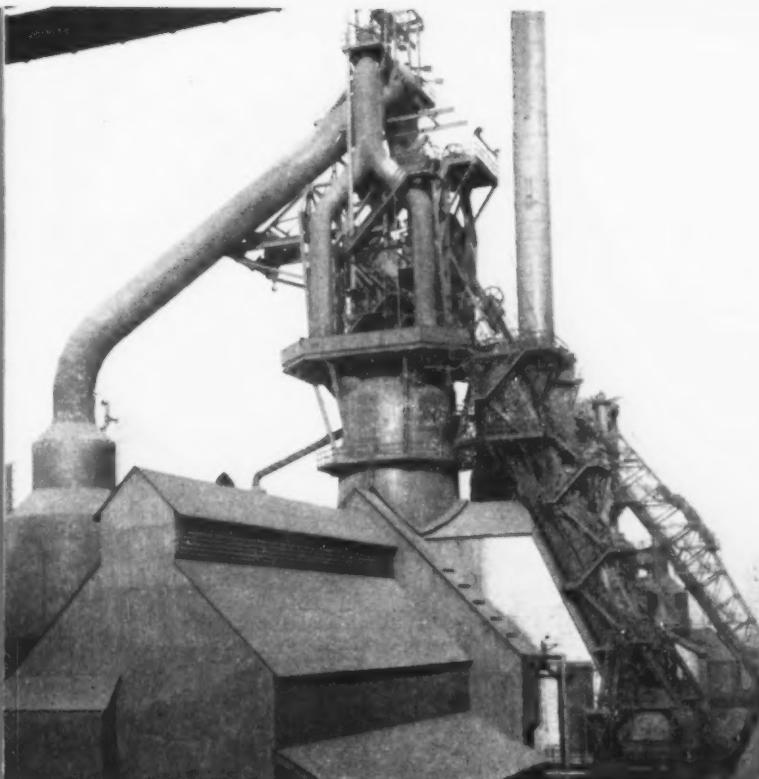
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